

**EVIDENCE BASED NURSING PRACTICE AND  
CONTINENCE CARE**

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## **Abstract**

The dissemination and implementation of research evidence upon which clinical practice should be based, pose many well-documented problems for nurses. The study reported here set out to identify some of the common barriers to the dissemination and utilisation of research findings and went on to explore what practising nurses believed would facilitate the use of research in one important aspect of clinical care: care of the incontinent patient. A series of small scale inter-related studies were undertaken using samples which comprised nursing staff involved in caring for the elderly, and patients in a community hospital. These studies allowed the identification of specific barriers to the use of research in practice and involved nurses in the development of appropriate strategies for applying research evidence on continence care within a clinical setting. Each of the studies required specific methodologies in order to achieve their objectives. The initial study used a postal questionnaire to identify nurses' perceptions of barriers to and facilitators of research use in clinical practice. A qualitative exploratory study was then undertaken to explore these perceptions in more depth using taped semi-structured interviews. The results of these interviews determined suitable strategies, specified by practising nurses for the use of research in practice. These strategies were then implemented and evaluated in two further studies using predominantly quantitative methods.

The first evaluation study employed the use of a clinical handbook, this evaluation used a pre- and post-test design with an experimental and control group. This study showed that the use of the handbook, a decanted user-friendly research based resource on continence care, improved nurses' knowledge of incontinence. The final study adopted case study methodology and evaluated the use of research evidence on one aspect of continence care: bladder re-education in a single setting. This case study used a number of outcome measures, including nurses' knowledge of and attitudes to incontinence and patient severity and satisfaction with treatment. The results of this study showed improvements in each of the outcomes measured.

The exploration of nurses' experiences of barriers to the use of research is not new. However, the involvement of clinicians in the development of implementation strategies is newer ground. By using this relatively novel approach, practising nurses were expected to feel enhanced ownership of strategies for implementation and as a result to be more committed to the process of change.

As a result of the current health policy drive for evidence-based health care, nurses increasingly recognise the need to base care on the best available evidence. However, without education, direction, support and encouragement at user level, implementation of research evidence will continue to be a slow and uneven process. The present study attempts to identify how such education, support and encouragement can be provided and evaluated.

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# **Chapter One: Introduction**

## **1.0 Introduction**

The present report focuses on the use of research evidence in health care practice, where a growing literature exists on the diffusion, dissemination and implementation of research. There are a number of theories in social psychology, sociology, change management and organisational theory of how innovation diffuses and what influences people to change their behaviour. The impact of knowledge on the process of dissemination and utilisation of evidence is of fundamental importance when understanding the relationship between evidence/knowledge and practice. The introduction below will outline views of knowledge dissemination and utilisation focusing on:

- knowledge and the real world
- knowledge origination and the research process
- resistance to innovation
- theories of when knowledge is used
- use of knowledge and knowledge based action in health care (specifically in nursing).

### **1.1 Knowledge and the real world**

The present report is grounded in the belief that new knowledge enables individuals to go beyond personal experience and traditional ways of comprehending. By gaining knowledge through research activities people can generate more effective actions. To provide a context for understanding the role of knowledge in the process of disseminating and utilising research findings, a brief account of general views of knowledge will be presented. Such views are discussed in greater detail elsewhere; these short summaries are drawn from Hammersley and Atkinson (1983), Habermas (1983) and Robinson and Vaughan (1992).

Robinson and Vaughan (1992) suggest that knowledge can be described in three ways, through the natural sciences, naturalism and critical social theory.

*The natural sciences.* A very specific research process is commonly used by natural science researchers (including medicine), that is: testing an already formulated

hypothesis. Thus a deductively derived theory or hypothesis is tested within an experimental environment; such a process provides an example of positivism. Positivism is based on three fundamental principles: objectivity, measurability and reproducibility. This process is often referred to as a reductionist process because in order to explain something it is often necessary to break it down into its component parts. A great deal of current knowledge is rooted in the natural sciences. However, certain limitations have been recognised with this approach: primarily there are many areas of knowing which cannot be tested in this way and the idea of truly objective investigation can be questioned.

*Naturalism.* Exponents of this school of thought suggest that the world should be studied in its natural state, as far as possible undisturbed by a researcher. Such an interpretative view does not test hypotheses using experimental conditions but instead explores a situation in the hope of gaining insight into the 'real world'. Theories are not usually tested but may be formulated as a result of such exploration. Meanings and understandings are sought rather than cause and effect. Criticisms of this method include the fact that some of the processes of measurement may be distorted and it is never possible to fully study a given set of circumstances.

*Critical Social Theory.* Habermas (1983) asserts that critical social theory is concerned with an individual's ability to act and make rational decisions on the basis of knowledge in order to gain a greater understanding of self. Critical social theory suggests that knowledge is limited by the socio-historical context within which it occurs (Allen, 1985). So, each person is limited by background factors such as the fact that they belong to social groups and some groups are more powerful than others. Gaining insight into what these limitations are leads to changes within an individual in terms of practical action. Critical social theory is expressed through action research which seeks change through reflection upon action.

## **1.2 Knowledge origination and the research process**

The present report explores the use of research evidence in practice, but in order to achieve this, it is first necessary to examine the nature of knowledge (or epistemology) and where research evidence originates. Again this section does not seek to provide an in-depth analysis, but only offers a short overview of the



origination of knowledge. Robinson and Vaughan (1992) describe traditional sources of knowledge:

- tenacity - the view that something is true because it has always been so, that some things are absolutely true.
- authority or expert derived view - that knowledge may be gained from literature, expert opinion or role-modelling, although such knowledge may be questioned by the user.
- a priori - that is logical knowledge reached by a process of deduction.

It is most likely that much individual knowledge arises through a combination of these three factors. Le May (1999) suggests that there are seven types of knowledge (encompassing the three already described):

1. Theoretical knowledge - generated through a process of logical thought.
2. Empirical knowledge - generated through research.
3. Practical knowledge - generated through logical thought associated with practice.
4. Experiential knowledge - generated through day-to-day experiences in both professional and personal lives.
5. Interpersonal knowledge - linked with experiential knowledge but gained through interacting with others.
6. Ritual - generated from traditions which are often unquestioned
7. Intuitive knowledge - reaching a decision without apparent logical thought.

Knowledge is likely to be a combination of one or more of these factors; it enables individuals to go beyond personal experience (experiential knowledge), benefit from others experience (interpersonal knowledge) and to benefit from the reliability associated with empirical knowledge.

### **1.3 Resistance to innovation**

Despite the benefits offered by empirical knowledge, a great deal of evidence has been accumulated which suggests that people who want to act effectively nevertheless seem to ignore relevant research evidence. Resistance to innovation does not seem to result from a deliberate decision, thought through and carefully considered. Instead

unconscious barriers to innovation exist. Argyris (1993) recognises that researchers have long been interested in producing knowledge that is applicable to everyday life. He distinguishes between applicable knowledge and actionable knowledge which, he suggests, is not only relevant to the world of practice: it is the knowledge that is used to create that world. The word action implies 'doing' and implementing. Argyris (1993) suggests that actionable knowledge is produced by researchers and then used by practitioners. It is distinct from applicable knowledge because to be actionable, authors of knowledge must specify the skills required to action the knowledge and the contextual conditions needed to maintain it, so that individuals can use it in everyday life. Applicable knowledge is knowledge which it is possible to apply, actionable knowledge is intrinsically constructed around practical action. Argyris (1993) seeks to bring together researchers and practitioners in understanding and taking action. He believes that social science researchers should produce actionable knowledge from their research without the rigorosity of the research becoming compromised. Argyris writes from a background of educational and organisational behaviour; similarly Havelock, Guskin, Frohman, Havelock, Hill and Huber (1969) recognise an expectation by industrial executives, government leaders and the general public that new knowledge should be adopted and actioned in all spheres, although they specifically mention agriculture, education and health care.

So resistance to innovation is a widespread and well-documented problem, but the importance of ensuring that knowledge arising from research feeds directly into practice is also widely acknowledged. The next section overviews some of the theories which underpin the implementation of new knowledge.

#### **1.4 Theories of when new knowledge is used**

In the review below, the key theory that will be explored is diffusion theory: how innovations diffuse into a system.

*Diffusion of innovation theory.* The body of literature on diffusion theory has emanated from a number of sources including rural sociology, education, public health, medical sociology, geography and economics. Rogers (1962) made the first attempt at presenting an overview of diffusion research traditions and a model of

diffusion theory. The key aspects of diffusion research which he identifies and which are outlined below are taken from the 4th edition of his book (Rogers, 1995). Rogers considers his diffusion model to be a conceptual paradigm with relevance for many disciplines, and he notes that this model has a pragmatic orientation towards helping to get research findings utilised. He states *“the diffusion approach helps to connect research-based innovations and the potential users of such innovations in a knowledge-utilisation process”* (p.99). Rogers defines diffusion as a process by which innovation is communicated through certain channels over time among members of a social system. Rogers identifies three types of consequence which result from the diffusion process:

1. desirable versus undesirable
2. direct versus indirect
3. anticipated versus unanticipated

There are four main aspects of the diffusion process according to Rogers:

- Innovation
- Communication channel
- Time
- Social system

Each of these aspects will be briefly described.

*Innovation.* The speed with which an innovation is adopted is influenced by a number of factors relating to a person's values, experiences or environment. Rogers identifies five prior antecedents: -

- Relative advantage - the extent to which individuals think they will benefit or be disadvantaged by a change (this can be difficult in health care provision, as one practice may benefit some and not others)
- Compatibility - the degree to which an innovation is perceived as being consistent with existing values, prior experience and needs of those adopting the change
- Complexity - the extent to which an innovation is perceived as difficult to understand
- Trialability - the extent to which an innovation can be implemented on a small scale so that problems can be addressed before full implementation takes place

- Observability - the degree to which the results of an innovation are visible to others

*Communication channel.* This refers to the means by which a message gets from one person to another. Such channels include mass media, which is important in increasing awareness, and face-to-face contact which uses an interpersonal exchange to persuade an individual to accept a new idea. Much diffusion research depends on subjective evaluation which can be influenced by peers through modelling and imitation. The effect of such exchanges is affected by the degree of similarity between individuals in terms of beliefs, education and social status. One difficulty with the diffusion of innovation is that the people relaying the innovation may be different from those who are required to implement it. This is often the case with researchers and health care professionals.

*Time.* Innovations take time to be adopted, Rogers outlines five linear steps in the innovation-decision process:

Stage 1: Knowledge. Rogers identifies three types of knowledge all of which are necessary to make change, these include

- awareness knowledge - finding out that an innovation exists
- how-to knowledge - finding out how to use the innovation
- principles knowledge - understanding why an innovation works as it does

Stage 2: Persuasion. This stage refers to adopters of innovations making the decision to adopt or reject the innovation and applies to the mental and emotional processes which occur within adopters.

Stage 3: Decision. At this stage individuals will decide whether to adopt or reject an innovation, it is at this stage that many individuals will want to adopt it for a trial period (trialability as outlined above).

Stage 4: Implementation. At this point the individual actually uses the innovation rather than just thinking about it - stages 1-3. At this stage an element of reinvention is often seen with users modifying the tool for implementation. The implementation stage continues until the user has become familiar with the intervention.

Stage 5: Confirmation. At this stage permanent decisions are made about the adoption or rejection of the intervention, there are four options

- acceptance of change and continuation
- acceptance of change but later discontinuation
- rejection of change indefinitely
- rejection of change but for adoption at a later stage.

Before describing the different types of innovation 'adopters', it may be useful to outline what Rogers means by the 'social system', the background against which all problem solving is seen as occurring. He sees this as the totality of inter-related units that are engaged in joint problem-solving to accomplish a common goal. Each unit may be associated with its own social norms and as a result social norms play a part in the diffusion of an innovation. Norms are the established behaviour patterns for the members of a social system They tell individuals what behaviour is expected of them and can act as barriers to change.

Rogers proposes several categories of people, considered as adopters:

- Innovators - radical, venturesome individuals who move out of local peer networks. Such radical members of the social system may not be respected by the wider group. These individuals may launch new ideas
- Early adopters - respected members of a local social system who have a high degree of opinion leadership. This group often lead innovation-decisions
- Early majority - this group will adopt new ideas before average members of a social group after some deliberation
- Late majority - this group usually makes up a third of the social system, they adopt new ideas after average members and are typically cautious and sceptical about adopting new innovations
- Laggards - traditional individuals who are the last in a social system to adopt innovations

Diffusion of research whether in public health, agriculture or education takes time and when plotted over time results in an S shaped curve. The S shaped curve rises slowly at first when there are few adopters, and then rises more quickly as opinion leaders come on board followed by the majority. It eventually tails off as the laggards finally adopt.

Rogers believes that within a social system opinion leaders play a central role in diffusion of innovation. Opinion leaders are those individuals within a social system recognised to have technical competence, social acceptability and conformity to a systems norms. Rogers suggests that *“the most striking feature of opinion leaders is the unique and influential position in the systems communication structure”* p.27. Research indicates that opinion leaders have greater exposure to the mass media than their followers and move outside local social circles They also tend to have a higher socio-economic class.

As well as opinion leaders, Rogers recognises the role of other change agents who play an important role in the diffusion process. He includes the following people as potential change agents: consultants, teachers, public health workers. Change agents according to Rogers usually have expertise but are often dissimilar from those individuals they are trying to change. This can cause problems. Because change agents are often dissimilar from those they are trying to change, the agent often uses a paraprofessional aide who is more likely to be similar to members of the social system requiring change. This increases the likelihood of an innovation being adopted. An example of the use of an ‘aide’ would be a consultant who wanted to implement an innovation in care delivered by nurses. The consultant might well choose to use a research nurse as an ‘aide’ who would be less likely to be thought to have selfish motives or manipulative intentions In addition the research nurse would need to have credibility.

The diffusion model is one of a number of theoretical models for understanding behavioural change and the conditions under which it occurs. Others include social influence theory (Mittman, Tonesk, Jacobsen 1992), adult learning theory, social

marketing (Lomas 1994), organisational change theory, the research, development and diffusion model, the problem solving model (Lippitt, Watson, Westley 1958) and the linkage model (Havelock and Havelock 1973). Not all of these theories will be discussed here. Instead, three of the models will be broadly outlined in Chapter Two, section 2.7. These theories have been described by Crane (1985a,b) as those strategies for dissemination and utilisation which may be most usefully applied to nursing practice. Since Crane's publications, perhaps one of the most relevant theories of research dissemination and implementation is Lomas's (1994) theory, which will also be briefly reviewed in section 2.7.

## 1.5 Knowledge and health care

Within health care a growing emphasis on measuring health outcomes, that is the recognition of the need to assess outcomes from both a patient and professional viewpoint (Stevens, Milne and Black 1998), has resulted in the pursuit of health care practices which provide the most effective clinical outcomes. It has become increasingly evident that the basis of health care decision-making is largely rooted in unsystematic exploration, with decisions often based on experience, habit and tradition (Morgan, Calnan and Manning 1985). Because of this, an increase in policy and research into clinical outcomes has come about, resulting in the evidence-based health care (EBHC) movement<sup>1</sup>. Evidence-based health care is the:

*“conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients”*

(Sackett, Rosenberg, Muir Grey, Haynes and Richardson 1996)

This statement can be unpacked by describing the tasks necessary to undertake it, namely those of collecting, appraising and disseminating relevant research and educating practitioners to use this evidence to make their practice more consistent and formal.

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<sup>1</sup> EBHC was originally described as evidence based medicine (EBM). However, the terminology is frequently amended to EBHC to include the large numbers of health care professionals allied to medicine, particularly nurses.

The move towards EBHC is not happening in isolation. In other areas (especially those rooted in scientific knowledge) profound changes in academic disciplines associated with the production of new knowledge and technological transfer have been recognised (Gibbons, Limoges, Nowotny, Schwartzman, Scott and Trow 1994). Gibbons *et al.*, (1994), identify a change in the transmission of technological knowledge from the innovator to the receiver, a process which was once straightforward and associated neither with feedback nor follow-up. They re-label 'technological transfer' as 'technological interchange' because so many people are now involved in the receipt of and interaction with and about new knowledge. These authors acknowledge that such changes in the technology of knowledge will require the involvement of research staff (in a different way from the generation of new technology alone).

Laudan (1984) points out that one role of the technological community, in addition to problem selection and solution, is the assessment of proposed solutions. She suggests that the assessment of new technology should be carried out by practitioners, because only they are in a position to decide whether an innovation is an improvement on existing practice. Laudan (1984) argues that technologies are not assessed in isolation but against technologies which already exist. This may be applied to the uptake of new research by nurses in clinical practice. Whether or not practising nurses decide to adopt new information will to some extent depend on whether or not the new information compares favourably with existing practice. However, Laudan (1984) also suggests that the existence of abrupt changes in traditional practice are rarely observed, a claim which seems to apply to health care practice where nurses historically have relied on tradition and experience to guide practice and have often ignored evidence of clinical effectiveness when it conflicted with past practice. Laudan (1984) points out a very important factor associated with technological change, that is the importance of the environment in which the change is to take place.

Changes in the environment often seem to precede the adoption of new technologies and it is possible that this insight can usefully be applied to nursing. The current



climate of the NHS sees increasing portions of the population requiring health care, limited resources available to deliver this care and a 'consumerist movement' with high expectations of care (Closs and Cheater 1999). This environmental change may have produced a context which is ripe for systematic, evidence-based changes to care.

The present investigation is grounded in the 'diffusion of innovation theory', described in section 1.4, and seeks to explore the dissemination and utilisation of research by practising nurses. It might help the reader if the factors which have prompted an emphasis on the use of research evidence in clinical practice within the current health care system are highlighted. Before considering barriers to and potential facilitators of the implementation of research evidence, it is useful to put these issues into their political and policy context. In line with many other professions, the last four decades have recognised the importance of basing practice, in medicine, education, and nursing on sound research evidence. Many influential government reports have recommended that nursing practice should be based on research evidence (Department of Health and Social Security, DHSS 1972; Department of Health, DOH, 1993a; 1993b; United Kingdom Central Council for Nursing, Midwifery and Health Visiting, UKCC 1992; National Health Service Executive, NHSE 1996; Department of Health 1998). The use of good quality research evidence is also high on the policy agenda for the National Health Service. In order to ensure the delivery of high quality 'best' care, nurses are expected to read published research, evaluate it and implement it where appropriate. However, there is as yet little evidence to suggest that this is actually happening in practice. Translating research findings into practice is a major problem, not only in nursing but throughout the whole of health service provision (NHS Centre for Reviews and Dissemination 1999). Many authors have offered reasons why a gap in the theory and practice of nursing exists (Hewison and Wildman 1996; Hicks, Hennessey, Cooper and Barwell 1996) and recommendations have been made for how this gap can be bridged (Mulhall 1997; Hicks *et al.*, 1996).

It is clear that the problem of disseminating and implementing research evidence is not new, indeed a whole industry based on promoting clinical effectiveness has been

built on the fact that such difficulties exist. However, most studies have made recommendations which assume that nurses along with other health care professionals are ready to implement research findings in clinical practice with minimal support. This seems unlikely to be the case. The present study does not attempt to detail every possible barrier to research utilisation; instead it investigates practising nurses' perceptions of barriers to using research in practice, and develops and evaluates strategies for the implementation of research in one aspect of clinical practice.

## **1.6 The project**

The project reported here is concerned with addressing this issue of dissemination and utilisation of research evidence by nurses. It recognises the drive towards research based practice and explores practising nurses' own perceptions of barriers to and facilitators of the use of research in everyday clinical practice. It applies this information by developing new interventions to facilitate the processes of dissemination and implementation of research evidence. Finally, it tests out these interventions on nurses' knowledge, attitudes and patient outcomes in an attempt to determine their effectiveness. The project under report comprises a descriptive account of nurses' perceptions of barriers and facilitators to research use, a quasi-experimental study of a nursing intervention, and a single case study experiment of a combined intervention to promote the use of research in practice. The aspect of care identified to test out these interventions was incontinence, a common symptom which all nurses will have some experience of dealing with.

## **1.7 The structure of the thesis**

The thesis is divided into nine chapters. Chapters Two and Three provide the background literature. Chapter Two provides the literature related to the dissemination and utilisation of research by nurses and provides a political background to the issues before discussing the translation of research evidence into clinical practice and problems associated with such efforts of dissemination. Theories of research utilisation are outlined before strategies for the implementation of research into clinical practice are explored. Chapter Three addresses the physical and

biomedical characteristics of incontinence in terms of its definition, epidemiology, aetiology, diagnosis, symptoms, treatment and management. In order to provide the basis for understanding the need for dissemination strategies a large body of relevant research is documented. The remaining chapters of the thesis concentrate on the research project itself. The project is divided into four parts or four inter-related studies. Chapter Four outlines a study involving the use of a postal questionnaire to determine nurse views on the barriers to and facilitators of the use of research in practice. Chapter Five presents a qualitative study which aimed to explore in more depth nurses' responses to the postal questionnaire. Chapter Six presents a study based on the information obtained in Chapters Four and Five about what nurses feel would aid the use of research in clinical practice and comprised the decanting of research evidence into a user friendly clinical handbook. Chapter Seven attempts to combine methods of disseminating research which nurses felt would be useful. This study is undertaken using a case study approach and makes some preliminary examination of outcomes on patients of disseminating research evidence to nurses. Chapter Eight provides an overall discussion in which the main findings are summarised and related to the aims of the research project. The results are compared with the work reviewed in Chapters Two and Three. The final chapter recognises shortcomings of the project and makes recommendations for further research. Aspects of this study have been prepared as academic papers and published in peer reviewed journals. Copies of these papers have been included in Appendix R.

In summary the purpose of the present research is to:

- identify and investigate barriers and facilitators to the use of research evidence in clinical practice
- evaluate a method of dissemination on nurses' knowledge using an experimental and control group
- evaluate a new strategy for continence promotion using a case study design to examine nurses' knowledge of incontinence, attitudes to research and patient outcomes.

## **Chapter Two: Literature review: the dissemination and utilisation of research by nurses**

## **2.1 Literature search and review methodology**

The literature search and review methodology adopted for each of the literature review chapters was the same but used different search terms as indicated. A systematic literature search using the methods outlined below was conducted to identify primary, meta-analytic and review studies in the English language appearing in refereed journals between January 1983 and September 1999. The search procedure included the following terms for this chapter:

**Research:** in practice

**Research:** dissemination

**Research:** based nursing practice

**Research:** utilisation

Evidence based health care

Clinical effectiveness

Theory - practice gap

for Chapter Three the following medical subject headings were used and included all relevant sub headings:

**Incontinence** urinary

**Incontinence** assessment

**Incontinence** stress

Education patient

Relevant non-English studies with English translated summaries appearing on the on-line systems were collected for reference purposes. The inclusion of literature reviews was considered important to include as they have the potential to offer a comprehensive overview of a particular subject area. The questions asked of the literature reviews cited were adapted from Mulrow (1987) and simply asked:

1. Was the review comprehensive?
2. Was it a critical evaluation of the literature to date?

A wider range of questions were asked of the published primary studies enabling a decision to be made on the quality of the paper and whether it merited inclusion in the review:

1. Was the study clear, concise and relevant?

2. Were the objectives and methods of the study clearly stated?
3. Was the research design described?
4. Was the sample used of sufficient size to gain meaningful results?
5. Were the results comprehensively reported?
6. Were recommendations made in the conclusion clear and concise, and did they relate to the studies stated objectives?

If primary studies did not yield positive answers to these questions they were excluded.

#### *Search procedure*

1. Firstly, the computerised information services MEDLINE, PSYCHLIT, CINAHL and SOCIOFILE were utilised to conduct on-line searches of reviews and primary studies published between 1983-1999.

- MEDLINE: The bibliographical data base of the National Library of Medicine, including the computerised version of the Index Medicus and International Nursing Index.
- PSYCHLIT: Psychology literature
- CINAHL: Comprehensive database of citations to nursing and allied health literature.
- SOCIOFILE: Abstracts of the world serial literature in sociology and related disciplines.

2. Manual chain searches were also carried out. This involved cross checking the reference list of each identified study to ensure completeness of the on-line search.

3. Further manual searching of key journals would have been desirable. However, because of time constraints, manual searching was limited to relevant current journals towards the end of the studies which would not have reached the computerised information services.

4. Recommended reading by experts in the field helped to ensure that key text books and "grey" literature were also used for reference and incorporated in the reviews; however it is unlikely that these types of recommendations could be reproduced. "Grey" literature consists of often unpublished information which is not always available via the usual resource channels; such information is often obtained from individuals familiar with the area of study.

5. Publications that provided information which had not been subjected to empirical test were reviewed as a number of interesting articles were found in non-refereed popular journals.

6. Manual searching of ASLIB Index of Theses containing lists of theses accepted for higher degrees by the Universities of Great Britain and Ireland and the Council for National Academic Awards between 1983-1999, along with the Steinberg collection of nursing research catalogue held at the Royal College of Nursing library.

#### *Data management*

After abstracts were downloaded from cd-rom systems or photocopied from the actual journals they were read and their details were entered onto a database management programme. This software programme, called REFMAN, is designed to manage textual information and the following details were entered for each article:

*key words, author(s), study title, journal details, an abstract of the study aims, main findings and conclusions.*

Those studies identified as most relevant were then selected for full review and appraised for inclusion in the evaluative reviews.

## **2.2 Introduction**

The objective of health care provision has always been to improve people's health outcomes. The pressures for research based practice are increasing in all areas of health care (Goode, Lovett and Hayes, 1987; Le May, Mulhall and Alexander, 1998). It is widely recognised that health care has been based upon opinion and experience rather than research evidence of clinical effectiveness (DOH, 1991). The implementation of research-based evidence into health care practice has long been recognised as an important issue and has been discussed at length. Implementation of evidence-based practice now comprises Health Service policy (DHSS, 1972 Briggs Report; DOH Strategy for Nursing, Midwifery and Health Visiting, 1993a; UKCC, 1992; NHSE, 1996). However, health care providers continue to struggle to base practice and service developments on sound research evidence.

Translating research findings into good practice is a major multi-disciplinary problem (Appleby, Walshe and Ham, 1995). It is widely recognised that 'the results of

research are worthless if they are not used' (Last, 1989). In recent years many medical journal articles have alluded to the need for the use of research in practice. The use of research in medical practice has undoubtedly been high on the U.K. political agenda in the 1990s. An article by Kenneth Calman, former Chief Medical Officer (1994) and an interview with Sir Michael Peckham (1994) former Director of Research and Development for the Department of Health indicate that the use of research in practice has been a primary objective in medicine in the 1990s. However implementation of research findings in clinical practice is a slow process (Miles, 1995). A number of new initiatives undertaken in the U.K., U.S.A. and Europe are currently attempting to address these problems. The Agency for Health Care Policy and Research (AHCPR) in the U.S.A., the Cochrane Collaboration and the Centre for Evidence Based Practice in Oxford and the Dissemination and Reviews Centre in York are involved in national and international collaborations to systematically review research evidence and compile research based guidelines on which health care should be based. The reviews take the form of published guidelines (e.g. AHCPR, 1992; 1996) and electronic review databases (Cochrane Collaboration, 1996). These organisations are primarily looking at co-ordinating, centralising and providing accessible and standardised written information. The first international conference on the Scientific Basis of Health Services took place in October 1995 in London highlighting the move toward an interface between science and health service provision.

There is undoubtedly a long history of problems associated with putting research evidence into practice. It is well documented that lemon juice was effective in the prevention of scurvy, a discovery made by James Lancaster in 1601. However, although James Lind repeated this experiment 150 years later confirming Lancaster's findings, it was another 50 years before lemon juice was introduced for the prevention of scurvy in the British Navy (Haines and Jones 1994). This is perhaps a rather extreme example. More recently the use of dilatation and curettage has been shown to be 'therapeutically useless and diagnostically inaccurate' (Lewis, 1993); however in 1992/3 it remained the fourth most commonly performed surgical procedure in the NHS. So it would seem there were in the past and still are in the present unacceptable delays in the implementation of important research findings.



Although there is a general consensus that clinical nursing practice should be based on research there is little evidence that this generally happens (Sheehan, 1986). Fraelich (1986) reported that less than 10% of research findings were applied in practice. So why does a gap exist between nursing research and nursing practice? Funk, Champagne, Weise and Tornquist (1991b) undertook a study in the U.S.A. of 924 practising nurses (40% response rate from a postal questionnaire) to identify what barriers existed to their using research findings. Some of the most commonly cited barriers identified were: lack of support, lack of awareness of research findings, research not being relevant or clear and implications not being clearly stated. Research evidence is often difficult to obtain (Closs and Cheater, 1994), individuals are not always confident about appraising the quality of a research article (Funk, Champagne, Weise and Tornquist 1991a; Hicks, 1994), there is often a lack of support from researchers and, notoriously, a lack of administrative and financial support for the implementation of research based evidence into clinical practice (Kirchoff, 1982). The dissemination and use of research findings appear to pose a substantial difficulty within nursing (Lelean, 1982; Hockey, 1987). Hunt (1981) found that research findings had little impact on the clinical practitioner and established that research findings are not always put into practice. Goode *et al.*, (1987) also suggest that nurses need knowledge of research in order to understand and evaluate the use of research findings in the clinical setting. Akinsanya (1988) stresses the importance of including research in basic nursing courses and Myco (1981) its importance within post-basic courses. A number of studies have suggested that practising nurses need to be given time to read research material, they also refer to the necessity of library facilities being available (Goode *et al.*, 1987; Luckenbill-Brett, 1987; Sheehan, 1986). There are undoubtedly specific challenges within the UK to push forward with evidence based health care.

It has been claimed in a number of studies that the strong sense of tradition within nursing has meant that care is not changed on the basis of research findings; instead it is based on experiential knowledge, making the implementation of change difficult (Fawcett, 1980). It has been suggested that as nurse researchers are usually away from

the clinical setting, they do not fully understand the problems of the practitioner (Dracup and Weinberg, 1983). To attain greater credibility it has been suggested that researchers increase their clinical involvement.

This review will begin with a short section relating to the history and political background of the use of research in practice and will continue to outline the theories of diffusion, dissemination and implementation begun in Chapter One section 1.4 before going on to discuss some of the reasons, already briefly outlined here, why the dissemination and utilisation of research findings pose a substantial difficulty in nursing.

## **2.3 Definitions**

The term 'research' is often used loosely to describe any kind of information-seeking. According to the Oxford English Dictionary, 'research' may be defined as "*systematic investigation to establish facts or collect information on a subject*". Polit and Hungler 1991 define it as "*systematic inquiry that uses scientific methods to answer questions or solve problems*". However, perhaps the most useful definition of research to be used by nurses is that given by the DOH (1993a) in the Report of the Taskforce on the Strategy for Nursing Research, Midwifery and Health Visiting which reads "*rigorous and systematic enquiry, conducted on a scale and using methods commensurate with the issue to be investigated, and designed to lead to generalisable contributions to knowledge*". 'Disseminate' may be defined as "*the diffusion or communication of research findings*" (Burns and Grove, 1993). Lomas (1993) suggests that the term 'dissemination' implies a more controlled flow of information from the source than 'diffusion'. He suggests that dissemination implies selecting information for the intended audience. 'Utilisation' of research means "*the use of knowledge generated through research to guide nursing practice*" (Burns and Grove, 1993).

## 2.4 Political background

It is widely recognised that Florence Nightingale appreciated the benefits of scientific enquiry during the Crimean War. She kept detailed records of the effect of nursing activities and interventions on patient care which led to changes in nursing care (Polit and Hungler 1991). However, nursing did not continue to pursue this scientific approach. In 1948, Brown reported that scientific research by nurses was negligible (Hopps, 1994); in fact it was not until the 1950s that sociologists and psychologists began to investigate nurses and the late 1950s before they became involved in research themselves (Hopps, 1994). Hopps (1994) suggests that Marjorie Simpson and her development of the Research Discussion Group in 1959 was instrumental in the development of nursing research. Sheehan (1986) considered three appointments in the mid 1960s to be of key importance in the development of nursing research. These were:

(i) The appointment of Marjorie Simpson as DHSS Nursing Officer (Research) in 1966, her responsibility being to develop research in nursing in the U.K. (ii) In the same year a programme of research projects was begun by the Royal College of Nursing and a project officer appointed. (iii) In 1967 appointment of a research officer was made by the General Nursing Council for England and Wales.

It was only in 1972 that the Briggs Report advised that the nursing profession:

*“.. should become a research based profession”*. This is considered by many to be the turning point for nursing, and remains a phrase frequently quoted by nurses. It may be suggested then, that we in nursing have a research tradition extending over only 40 years in the United Kingdom (U.K.), whilst many claim the medical profession has a research tradition going back for four centuries, considering the publication in 1543 of Andreas Vesalius' book on anatomy to be the starting point of medical research.

The tradition of research in nursing in the United States of America (U.S.A.) has a longer history than in the U.K., although much of the initial research undertaken in the U.S. up to and including the 1940s explored nursing education rather than practice (Polit and Hungler, 1991). In the U.S. since the 1920s profound change had occurred in nurse education: many nurses were educated to degree and higher degree level and

government funding supported this move. Research was beginning to investigate the fundamental role of the nurse, including what the nurse actually does. By the 1960s it was realised that little research had been undertaken in nursing practice but it was not until the 1970s that a real change in emphasis occurred from research into nurse education and nurse functions to research exploring improvements in patient care. It is reported that in the 1970s U.S. nurses were becoming aware of the need for a scientific base for clinical practice. This stage links to the U.K. 1972 Briggs Report, and from this point comparisons can begin to be made between the U.S. and U.K. history of research based practice. Research priorities were established in both the U.K. and U.S., and nurses were explicitly encouraged to develop their research skills.

## **2.5 Translation of research evidence into clinical practice**

Regardless of when medicine and nursing realised the importance of using research to inform effective health care, similar problems have continued to affect care delivery by doctors, nurses, physiotherapists and dieticians. Translating research findings into good practice has proved to be a major multi-disciplinary challenge, which it is essential to address. Influential medical journal articles have alluded to the need for the use of research in practice (Calman, 1994). The use of research in medical practice is undoubtedly high on the U.K. political agenda. Such organisations as the Cochrane Collaboration, and the Centre for Evidence Based Practice described in section 2.2 are gaining funding to encourage the use of health care research in clinical practice. However, such organisations are primarily looking at co-ordinating, centralising and improving the accessibility of written information. It may be suggested that within the health care professions, such co-ordination, centralisation and accessibility of information will not necessarily lead to evidence based practice, because implementation of the evidence rather than its availability is the key problem. Freemantle, Harvey, Grilli, Oxman, Bero and Grimshaw (1995) point out that although a great deal of effort has been spent in establishing the effectiveness of clinical interventions, little effort has been put into ensuring that clinical practice reflects what is known. Research information still does not find its way into the clinical setting. Hunt (1987) recognised that failure to implement research findings in

clinical practice is not necessarily related to the amount of information available to nurses, in fact she suggests information overload may be part of the problem.

## **2.6 Problems associated with the dissemination and utilisation of research evidence**

The dissemination and utilisation of research is not a unique problem in the U.K. or a problem unique to nursing. In fact it is a widespread and well-documented problem, both here and in the U.S.A. This begs the question why do research findings have so little impact on nursing practice? The starting point for this review is the question asked by many practising nurses: Is there a need to change practice? A need to change practice seems to be the assumption underlying the 1972 Briggs Report, nearly 30 years ago, when it was suggested that nursing should become a research based profession. The professionalization of nursing seems to depend critically on the use of the research base. The question may be raised as to why nursing should describe itself as a profession, having for many years based itself on tradition (Fawcett 1980), myth and ritual (Walsh and Ford, 1989). Lacey (1994) suggests that nursing's claim to be an emergent profession offers both power and status for nursing. The basis of a profession is rooted in its relationship to research: the undertaking of research and equally importantly its utilisation in practice (Lacey, 1994). The relationship between the use of research by nurses, and the pursuit of professionalisation is a contentious issue, which this review will not endeavour to explore. However it is noted that the issues of whether nursing exists for the benefit of patients or in the pursuit of a profession, and whether or not these goals are truly compatible, are widely documented in nursing literature elsewhere.

The utilisation of research poses difficulties for many disciplines in addition to nursing. The following section continues to outline some general theories of research utilisation before addressing the issues of how research can be brought into everyday clinical practice (these theories were introduced in Chapter One, section 1.4. A final section presents existing studies of the dissemination and utilisation of research in clinical practice.

## **2.7 Theoretical models of diffusion, dissemination and implementation**

### *The research, development and diffusion model (Coleman, Katz and Henzel 1966)*

This model follows a sequence of pure research, applied research, conversion and design, field testing and widespread diffusion. The scientist/researcher is the active driver of this process whilst the user remains passive. There is an assumption in this model that well-developed innovations will be adopted and used.

### *The problem solving model (Lippitt et al., 1958)*

This approach sees the user as the driving force behind:

- realising a need and translating it into a statement of a problem
- searching and finding a solution
- adapting the solution to meet the users needs
- appraising the effectiveness of the solution in relation to the original problem.

This model assumes that needs identified by users and then resolved by them are more likely to be sustained than those which are identified by other, usually hierarchical sources. Crane (1985b) acknowledges that this model does not specify the requirement of research evidence in the change process.

### *The linkage model (Havelock and Havelock, 1973)*

This model identifies a link between a user (e.g. a hospital) and a resource (e.g. university department). The resource generates new knowledge and the user implements it, feeding back information to the resource on effectiveness or specific needs of the user for implementation. Within this partnership, both partners benefit: users learn how to use research evidence and the resource gets feedback of users' problems. The application of theoretical models to improve the uptake of research in local practice will be outlined in the following section.

### *Strategies to improve the uptake of research in local practice*

There are a number of recognised strategies to improve the uptake of research in clinical practice, however there are no clear links between the theories of change and many of the strategies used in health care practice. Much of the research that has

looked at how to best implement research evidence in clinical practice has been theoretical, particularly studies that examine information provision. Lomas (1993) differentiates between 'diffusion' - the way in which information flows from a source into a system, 'dissemination' - the way in which information is received by an individual is organised and becomes knowledge, and 'implementation' - the way individuals translate knowledge into changes in behaviour.

#### *Passive diffusion models*

Lomas (1993) describes the diffusion of innovation as a passive process within which information is not specifically targeted and which is unplanned with respect to whom information reaches. Within health care, passive diffusion models best fit the way in which most information is transferred: traditional mechanisms of passive diffusion include the publication of research in academic journals and conferences. Such processes lack planning, control and monitoring. The diffusion model assumes that health care professionals actively seek information, are capable of appraising, applying and using it to make research-based decisions in clinical practice. In addition it is assumed that just through providing appropriate information, beliefs, attitudes and therefore practice will change. Beenis, Benne and Chin (1976) refer to this as the rational/empirical model which views knowledge as a major source of power and assumes that changes can occur as a result of transferring knowledge through education. However, it is unlikely that such non-interactive education changes clinical practice. Freemantle *et al.*, (1995) found that the effect of printed materials on the behaviour of health care professionals was at best small. On the positive side, though it may be true that educational materials do not change practice, they may be effective in increasing knowledge which can in turn facilitate changes in behaviour (Effective Health Care Bulletin, EHCB, 1994).

#### *Dissemination models*

The dissemination of information is a more active concept which involves targeting and tailoring information to a specific audience. If awareness of a message is the goal Lomas (1993) suggests that identification of the audience and tailoring of the message is the key to success. Dissemination of information includes the synthesis of research

evidence into a user-friendly package. Such synthesis means that information is delivered more effectively and it is supposed that this will lead to behavioural change. Dunn (1983) suggests that utilisation is either 'conceptual' or 'instrumental'. Conceptual use changes the way in which someone thinks about a situation whilst instrumental use is the adoption of a specific idea in practice. It has also been suggested that the environment affects the incorporation of new ideas. It has been recommended that those involved in changing clinical behaviour should move beyond unilinear models of information gathering and dissemination and move towards research that address local ideas, practices and attitudes of professional groups.

### *Implementation Strategies*

Lomas (1993) describes the concept of implementation as an active process which uses organisational and behavioural tools to enable practitioners to incorporate new knowledge when making clinical decisions. Such implementation strategies enable behavioural change through a number of communication channels by addressing individual, group, organisational and environmental barriers to change. The following strategies have been used to implement innovation:

- social influence, opinion leaders
- change agent approach, facilitators
- targeted approaches, academic detailing/educational outreach
- quality improvement approaches, audit and feedback
- multifaceted interventions

### *Educational outreach*

'Academic detailing' or academic outreach involves a personal visit by a trained person to health care providers in the local setting (Soumerai and Avorn, 1990). Central to academic detailing is the presentation of educational materials and reinforcement of its importance. The presentation of detailed information uses interpersonal communication to influence behaviour. The educational needs of practitioners are targeted and educational packages are tailored to their needs. Detailing also aims to understand the underlying motivations of practitioners and account for factors such as attitudes, peer influence, patient demands etc. Academic



detailing has been used predominantly in medicine and few studies of its use are to be found within nursing. A randomised controlled trial by Wyatt *et al.*, (1998) tested an intervention to improve the way obstetricians and midwives selected and used evidence. The intervention was a single educational visit by a respected obstetrician and midwife which included discussion guidance and the provision of materials. The study found improvement in both the control and experimental arms. The authors suggest that 'opinion leaders' may not have been appropriately targeted and large educational initiatives are not usually as effective as small scale focused initiatives. One of the problems of using educational outreach in isolation is that ongoing support is often lacking.

### *Facilitation*

The concept of facilitation was first used in areas outside health care, including counselling, education and industry. Within these disciplines the term 'facilitation' has been used to describe the process of enabling people to learn and to adapt or change behaviour. Learning theories have moved away from traditional, prescriptive teaching strategies for imparting knowledge, towards methods where educators become facilitators of learning. The facilitator identifies student needs, encourages critical thinking and assesses students' learning. Student-centred teaching such as problem-based learning involves students becoming self directed, reflective and involved in the learning process (Maslow, 1968; Brookfield, 1986). Within nurse education, facilitative learning approaches have been widely used. Facilitators can be seen as key players in the implementation of research in clinical practice.

There are a wide variety of implementation strategies. Although some of these have not been outlined here, all strategies seem to emphasise face-to-face communication by a change agent, which has been shown to be a key factor when influencing practitioners to change their practice (EHCB, 1994).

### *Applying the models*

Three major research utilisation programmes for nursing have been developed in the U.S. since the 1970s. In 1971 the Western Interstate Commission for Higher

Education (WICHE) Regional Program for Nursing Research Development (Kreuger *et al.*, 1978) attempted to increase the utilisation of research in practice by adopting Havelock's linker theory, feeding research findings to practitioners who could implement these research findings in practice. This link was achieved by education and support and was intended to change practice in specific aspects of care including pre-operative teaching and treatment and prevention of constipation in nursing home residents. In 1975 the Conduct and Utilisation of Research in Nursing (CURN) project (Horsley, Crane and Bingle, 1978) was initiated, which aimed to translate research outcomes into clinical knowledge and nursing outcomes. The project was based on Rogers' theory of diffusion of innovations. The NCAST project developed by King, Barnard and Hoehn (1981) again used Rogers' diffusion theory. The project focused on individual nurse practitioners, providing them with research based education on environment assessment for children. These large studies aimed to increase the use of research in clinical practice through education and involvement in the change process. Many researchers have used these models to implement change in the United States (Goode *et al.*, 1987; Funk *et al.*, 1991a) and they have also been used in the U.K. where Hunt (1987) developed a small scale research implementation study based on the WICHE programme.

## **2.8 How do we bring research into clinical practice?**

Fraelich (1986) reported that less than 10% of research findings are applied in practice. So why does this immense gap exist between nursing research and nursing practice? Funk *et al.*, (1991a) undertook a study in the U.S. of 924 practising nurses (40% response rate from a postal questionnaire), to identify what barriers existed to the use of research findings. On average, nurses identified 15 barriers to using research in practice. Some of the most commonly cited barriers were lack of support, lack of awareness of research findings, research not being relevant or clear and implications not being clearly stated. Many of these barriers have been reported by other U.S. authors (Goode *et al.*, 1987; Kirchhoff, 1983). However, whilst some of these barriers have been recognised, the gap between research and practice still persists. A number of key factors have been identified primarily in U.S. work, but more recently reflected in U.K. studies, which affect how research can be brought into

clinical practice. The factors identified include education (Akinsanya, 1988; Myco, 1981), accessibility of information (Goode *et al.*, 1987; Luckenbill-Brett, 1987; Sheehan, 1986), facilitation of change/researcher involvement (Dracup and Weinberg, 1983) and organisational support (Funk *et al.*, 1991a).

## 2.9 Education

It is widely accepted that education is one of the key areas which has the potential to link research with practice, by changing individual nurses' attitudes to research (Ketefian, 1975; Akinsanya, 1988; Closs and Cheater, 1994). A number of methods have been suggested for introducing research into practice by using educational initiatives and they will now be discussed.

Before discussing the place of research in the nursing curriculum, it is necessary to consider the preparation of teaching staff for educating others on research and its importance. The implications of nurses requiring education on research has clear implications for the preparation of nurse educators (Birchenall, 1991). Perkins (1992) highlights the fact that for both nurses and nurse tutors, teaching and learning about research can pose problems which ultimately lead to a fear of research. This fear of research by nurse educators may influence their ability to teach others about research. Indeed Gould (1986), in her study of nurses' failure to implement research findings on pressure sore prevention and treatment, suggests that one of the reasons for the lack of research utilisation was that nurse educators did not always incorporate research material into teaching programmes. In fact, Gould attempted to assess the knowledge of nurse tutors on the prevention and treatment of pressure sores. Although Gould does not give any detail of how she obtained this information she concludes that knowledge of the subject was limited. Given this lack of awareness among those responsible for teaching nurses on the subject of pressure area care, she concludes that she is not surprised that: "*generations of nurses have acquired their knowledge of pressure sores haphazardly*". M. Hunt (1987) considers that in order to promote 'research mindedness' nurse teachers should use research critically as a basis for their teaching. However, she points out that merely giving information to learners

does not equip them for practice. Henderson (1979) considers that nurses need to be able to locate and evaluate information themselves. J. Hunt (1981) highlights the fact that research should become a more available tool, and holds researchers responsible for making research more accessible, but supports Henderson's view that practising nurses have a responsibility to locate information for themselves.

Akinsanya (1988) goes a step further and suggests the actual practice of undertaking small scale research studies in the educational setting 'demystifies' the whole research process. He claims that it encourages learners to see research as an integral part of their professional development. Webb and Mackenzie (1993) support Akinsanya's view in their study where trained nurses undertaking a research course carried out a research project looking at nurses' knowledge of and attitudes to research. Twenty three nurses took part in the study and Webb and Mackenzie concluded that these individuals gained valuable knowledge through undertaking the research project. It would seem that close supervision of small scale research projects undertaken within research courses are effective in providing those involved with greater insights into the research process. However, issues discussed earlier must be borne in mind: if tutors are to effectively supervise even small scale research studies, they themselves must have sufficient research skills to do so.

Post-registration education is of great significance when discussing the implementation of research findings. A number of studies have examined the effect of research-based, post-registration education on bringing research information into clinical practice. Harrison and Novak (1988) undertook a study in the U.S. among nurses and elderly patients in an elderly care setting, 76 nurses were involved in the study and 33 in patients. Five hundred and fifty nurses were eligible to take part in the project, so the response rate was very low and no control group was used. The method of teaching used was four (8 hour) continuing education programmes on gerontological nursing delivered to gerontological nurses. Its impact was evaluated using a pre-test/post-test design for both nurses and patients. Data were collected from nurses using the Miller-Dodder Ageing Quiz, and the Kogan Attitude to Old Age Scale. The impact on patients was evaluated by interviewing patients using both

a satisfaction and a perception scale. Results indicated that nurses' knowledge and attitudes improved significantly while patients' satisfaction and perception scores decreased, although not significantly. Such results raise questions about the introduction of education and research: whilst nurses' knowledge and attitude benefited positively there were no measurable benefits to the patients, and Harrison and Novak (1988) claim that the client group studied were generally satisfied with nursing care. However, this is merely an assumption and the effects of nurse education on patients themselves remain to be fully evaluated. Harrison and Novak's study involved such a small number of subjects that results cannot be generalised. Because a control group was not included in the study design it is also difficult to determine whether the intervention was responsible for improving knowledge.

It has been suggested that one reason why research is not put into practice by U.K. midwives is that they do not have the knowledge and skills to assess the value of published articles (Hicks, 1994), and this view is reflected among general nurses (Funk *et al.*, 1991a; Lynn, 1989). Hicks (1994) in her small study of 19 midwives participating in a training day to develop midwives' critical research reading skills, found significant improvements in midwives' appraisal skills following training. This information was obtained following a pre-training day evaluation of a research article and a post-training day evaluation of a research article. The sample was small and taken from volunteers, and long term effects have not been reported. However, such brief courses may, as Hicks suggests, facilitate the first stage in the 'research into practice' process. Church and Lyne (1994) also recognise the need for critical appraisal of research articles, to avoid the assumption that if a research report is published its findings must be 'correct'. They discuss evidence concerning the use of a pressure relieving device in nursing and midwifery as an example of the relationship between research based knowledge and practice. They suggest that empirical findings were paraphrased, re-interpreted or even misquoted in subsequent publications. Church and Lyne (1994) describe how this process led the original findings relating to the use of ring cushions to be mis-interpreted and these errors were widely accepted by practitioners. They suggest that detailed appraisal of research articles is crucial as well as careful checking of secondary sources to ensure that re-interpretation of

original studies, (which they suggest is common in literature reviews) is recognised before research findings are applied to practice. Some of the education required on research is very basic. Hunt (1981) argues that one of the reasons why research is not used in practice is nurses' lack of understanding of the terminology used in research reports. This problem needs to be addressed within both pre- and post-registration education.

Closs and Cheater (1994) recognise that research is now included in the nursing curriculum for all Project 2000, diploma and degree courses, and recognise the ENB 870 course Introduction to the Understanding and Application of Research. It has been suggested in the U.S. that to further educate practising nurses on bringing nursing research and clinical practice into closer alignment, the position of Clinical Nurse Researchers who hold doctoral qualifications should be more widespread (Knafl, Bevis and Kirchoff, 1987). This view is supported by another U.S. author, Collins (1992), who suggests that Clinical Nurse Specialists who are doctorally prepared would help to fill the gap between research and practice. Gott (1981) in the U.K. recognised that the appointment of research specialists would assist practising nurses in the implementation of research findings, as well as offering support and supervision to those nurses wishing to undertake their own projects. She did not suggest they should be educated to doctoral level as recommended by Knafl *et al.*, (1987) and Collins (1992) in their studies referring to the U.S. setting. Since 1981, more and more such posts have been developed in the U.K. with varying titles and varying remits. A consistent policy of employing 'research nurses' educated to a specified level to educate, supervise and support a specified number of nurses in the research domain would go some way to demonstrating commitment to the importance of research and would provide the beginning of a strategy for improvement. Closs and Cheater (1994) point out that a comprehensive approach to the incorporation of research into nurse education is essential in order to avoid its separation from more clinical aspects of nurse education.

## 2.10 Accessibility of information

Hunt (1981), in her much cited article looking at the use of research findings, states that “*research needs to become a more available tool*”. Many authors since have supported this concept. Closs and Cheater (1994) stress that research must be accessible: both easy to obtain and easily understood. Hunt (1981) states that most research reports are written for other researchers and therefore “*might as well be in a foreign language*” as far as many practising nurses are concerned. Funk, Tornquist and Champagne (1989a) support this view that researchers tend to write for other researchers and claim that the communication of knowledge to practitioners is often ignored. One way in which this problem may be overcome is by researchers writing for researchers within academic constraints, but also making the same information accessible to a wider audience of practising nurses. Closs and Cheater (1994) suggest this may be achieved through the submission of short reports, plainly written, in professional journals. The assumption is made here that practising nurses do read professional journals, an assumption which has been challenged by some authors (Hunt, 1980; Luckenbill-Brett, 1987). It has been demonstrated that when care is taken to communicate research findings in a manner appropriate to the audience, nursing practice can be improved. Williams, Roe and Sindhu (1995) reported a study of nurses’ reported practice when caring for patients suffering from incontinence before and after receiving a Clinical Handbook for Continence Care (Roe and Williams, 1994). This study forms part of this project and is reported in Chapter Six. This handbook presented research evidence relating to the care of patients suffering from incontinence in an accessible, user-friendly package for practising nurses, avoiding off-putting technical language. The study resulted in significant improvements in reported practice following use of the handbook and avoided some of the common barriers to research utilisation described by many authors.

Miller and Messenger (1978), in a survey of practising nurses, reported that participants in their study were frequently unable to locate research findings in a particular area of interest. Moody (1987) confirms this finding, reporting that a common problem among nurses is locating research information on a specific subject. However, M. Hunt (1987) suggests that the problem nurses have in using research is

that there is often too much research information or 'information overload', especially in important areas. MacGuire (1990) suggests two areas where such information overload may exist, those of pressure area care and the management of continence. She suggests that in these areas the problem is not lack of relevant research findings but the failure to 'distil' relevant findings for implementation in practice. MacGuire (1990) goes on to point out that the synthesis of existing research is not a high priority for researchers or their funders, but stresses that communication of research findings in an acceptable form to practitioners is an important vehicle for transferring research into practice.

The use of meta-analysis may offer one way of transferring a large body of research literature into a more usable definitive study (MacGuire, 1990; Closs and Cheater, 1994). Meta-analysis provides a statistical method for combining the results of research studies (MacGuire, 1990). Quantitative interpretation is undertaken on data pooled from multiple studies in a particular area obtained from a systematic literature review (Closs and Cheater, 1994). The more widespread application of meta-analysis may go some way to overcoming the problems associated with seeking to base practice on small scale studies which may not be generalisable or applicable (MacGuire, 1990). It is common for questions to arise on critical appraisal skills study days about changing practice on the basis of a study which has not been replicated (Hicks, 1994; Church and Lyne, 1994). The CURN study (Horsley, Crane, Crabtree and Wood, 1983a), stresses that "*research utilisation should be based only on a series of replicated studies*". Ideally, changes in practice should be based on rigorous replicated studies, however it must be recognised that evidence based health care is about applying the best available evidence to a specific clinical question or situation.

Luckenbill-Brett (1987) undertook a study of 216 nurses to determine whether they were aware of, persuaded by or used research findings in 14 different aspects of care. She found the majority of nurses were aware of innovations (or new information), were persuaded by it, and used the information at least sometimes. However, some innovations were better used than others and some nurses more innovative than



others. In conclusion Luckenbill-Brett stresses the continuing need for some of the practical aspects of the innovation diffusion process in nursing to be addressed.

The accessibility of information is generally acknowledged to be of paramount importance in the implementation of research in clinical practice. However, a number of issues remain, including who is responsible for making research information accessible to the widest possible audience - a question posed by Closs and Cheater (1994). They suggest that the persons responsible are the researcher, the practitioner, the manager or a liaison person or a combination of these. MacGuire (1990) poses similar questions and asks how we introduce new information: from the top, bottom, top to bottom or sides to middle? So, although it may be concluded that making research information available and accessible to nurses will go some way towards its implementation in practice, questions remain about how this should happen.

## **2.11 Facilitation of change**

Wilson-Barnett, Corner and DeCarle (1990) suggest that “*researchers need to face the realities of practice if they hope to influence nursing care*”. It has been suggested that unifying education, practice and research was a way of helping staff to improve practice through facilitation, and Vaughan (1989) uses such an explanation to describe the role of the lecturer practitioner. M. Hunt (1987) in her action research study looking at the process of translating research findings into nursing practice in two specific aspects of care (mouth care and pre-operative fasting), found the use of nurse managers, nurses’ teachers and ward sisters as role models and educators to be most effective in bringing research findings into practice.

Wilson Barnett *et al.*, (1990) learnt from Hunt's (1987) work that it is unreasonable to expect individuals to change their behaviour or practice unless they themselves are involved in the process of deciding what should be done and why. In fact, Wilson Barnett *et al.*, (1990) stress that because nurses are professionals accountable for their own actions (UKCC, 1992) it is unacceptable to impose change which has not involved their participation in decision making.

A number of authors recognise the problem of the nurse-researcher undertaking a study to implement changes (Ross, 1985; Wilson-Barnett *et al.*, 1990). Two studies are described by Wilson-Barnett *et al.*, (1990). The first study evaluated a ward-based teaching programme for nurses caring for patients with a tracheal stoma. The study involved patients and staff on four ear, nose and throat wards and adopted an experimental design. Guidelines were developed and teaching sessions, both theoretical and practical were developed. The intervention was evaluated by assessing patient welfare, and nursing practice and nursing knowledge. Day to day staff contact was maintained between ward staff and the researcher. Overall both researchers and nurses were persuaded of the benefits of this intervention. The second study described was an evaluation of the effects of a teaching package on nurses' knowledge and attitudes to cancer and cancer patients. The study adopted an experimental design involving 127 newly qualified staff in two hospitals and aimed to design and evaluate a teaching intervention to improve knowledge, attitudes and confidence. The teaching package involved a three day hospital-based workshop on cancer care for one group, a lecture on cancer care for the second group, whilst the third group acted as a control. The effect was evaluated using an attitude scale, knowledge test, perceived competence checklist and taped interviews. The results of the study showed modest shifts on each scale for the groups. This study lacked any reference to patient outcomes, although it is presumed that the objective of the work was to improve patient care. Both studies suggest that the facilitator-researcher role is of benefit to the nurses involved, although further work is required to determine the effects of such interventions on patient outcomes.

## **2.12 Summary**

In an attempt to make a thorough search of the literature on the use of research in practice, it was noted that there is a dearth of available U.K. literature on the subject, particularly in the form of empirical studies. Reviews (and indeed reviews of reviews) are most commonly found in the U.K. literature. None of the studies have addressed the issue of sustainability of implementation strategies, they refer to short-term or immediate outcomes of implementation methods. To some extent this can be accounted for by the relatively short period of time over which these issues have been

explored, however if different implementation methods have different long-term outcomes, it is essential that these are explored and evaluated in order to identify the most clinically and cost-effective methods of dissemination and implementation. Audit of implementation strategies would provide a means by which strategies could be monitored while offering support for the implementation process (Mead 2000). Kirchhoff (1982) suggests that if research is to be used in clinical practice, nurse researchers and managers need to be involved. She claims that “*passive diffusion of research results is inadequate, unsure and slow*”. This review has provided an introduction to the use of research in practice, to communicate the importance of the issues, has described efforts made to translate research evidence into clinical practice and highlighted some of the problems associated with the dissemination and utilisation of research evidence. It has described current theories of research utilisation and addressed the question of how we bring research into clinical practice, by appraising the literature relating to three potential links between research and practice: education, accessibility of information and facilitation of change. It may be concluded from the literature reviewed that the translation of research findings into practice is an important issue, which ought to be addressed within nursing if appropriate and well defined strategies can be established.

U.K. researchers need to undertake more empirical studies to determine what methods are appropriate for implementing and encouraging the utilisation of research in practice in specific areas and on specific subjects, in both the short and long term, in the hope that these ultimately become more generalisable. It was the aim of the present study to disseminate research information on incontinence to nurses working within elderly care units, identifying methods by which research evidence on incontinence can be disseminated and used in practice. These methods were evaluated in terms of both nursing outcomes and patient outcomes. The aspect of care identified in this study was urinary incontinence: a critical review of the literature on this subject is given in the following chapter.

## **Chapter Three: The research literature on urinary incontinence**

### 3.1 Introduction

The previous chapter offered a broad overview of the general issues surrounding the dissemination and utilisation of research evidence in nursing. This chapter focusses on a specific aspect of nursing care: incontinence. In order to test the hypothesis relating to the use of research in clinical practice, a well-defined area of clinical practice needed to be identified. A large evidence base exists in the area of continence care although the literature is of variable quality. There is however, sufficient evidence from which best practice can be derived. The evidence will be detailed in this literature review chapter. In addition, all nurses have some experience of caring for incontinent patients and will be able to identify with their care. It was for these reasons that the specific problem of incontinence was identified, although many other areas of care could equally well have been chosen.

Urinary incontinence is undoubtedly a widespread and far reaching problem and this is reflected in the substantial research which has been carried out on urinary incontinence, its aetiology, symptoms and management. The present review concentrates on a limited number of aspects of urinary incontinence and is divided into sub sections, presenting current research evidence relating to: the prevalence of urinary incontinence, types of urinary incontinence, assessment of urinary incontinence and the promotion of continence. Faecal incontinence is not examined. The review is completed by a section on education which includes aspects of learning, the importance of teaching and their implications for nursing.

### 3.2 Definition of incontinence

The International Continence Society (ICS) established a committee for the standardisation of terminology of lower urinary tract function in 1973 which defined urinary incontinence as *“the involuntary loss of urine which is objectively demonstrable and a social or hygienic problem”* (Anderson, Abrams, Blaivas and Stanton, 1988). Urinary incontinence denotes: a symptom, a sign and a condition. The symptom is the patient's statement of involuntary urine loss. The sign is the objective demonstration of urine loss and the condition is the urodynamic demonstration of

urine loss (Anderson *et al.*, 1988). Whilst the ICS definition of incontinence has been frequently used in a number of publications (Ferne, Jewett, Autry, Holliday and Zorzitto, 1983; Wyman, Harkins, Chuoi, Taylor and Fantl, 1987; Mohide, Pringle, Robertson and Chambers, 1988; Borrie and Davidson, 1992; Molander, 1993), many authors have not embraced this standard definition but have given their own (Feneley, Shepherd, Powell and Blannin, 1979; Thomas, Plymat, Blannin and Meade, 1980; Yarnell, Voyle, Seetnam, Millbank, Richards and Stephenson, 1981; Ouslander, Kane and Abrass, 1982; Diokno, Brock, Brown and Herzog, 1986; Herzog and Fultz, 1990a; Simeonova and Bengtsson, 1990; Hellstrom, Ekelund, Milsom and Mellstrom, 1990; Ju, Swan, Merriman, Choon and Viegas, 1991; O'Brien, Austin, Sethi and O'Boyle, 1991; Burgio, Matthews and Engel, 1991; Rekers, Drogendijk, Valkenburg and Riphagen, 1992; Kok, Voorhorst, Burger, Van Houten, Kenemans and Janssens, 1992; Cutler, Friedman, Felmet and Genovese-Stone, 1992; Brocklehurst, 1993; Lagace, Hansen and Hickner, 1993). Nevertheless the definitions given are not completely diverse, with a number of authors using similar definitions. Thus for example, Thomas *et al.*, (1980), Ju *et al.*, (1991), Feneley *et al.*, (1979), O'Brien *et al.*, (1991) have used the definition of urinary incontinence as "*leakage or involuntary loss of urine two or more times in the past month*". This tightens the definition to exclude individuals who have been incontinent for only a short period of time which has resolved, for example, due to illness or temporary reduced mobility. The problem with the lack of consistency of definition is that it makes comparison of data, particularly of prevalence very difficult and it is perhaps suprising that although a standard definition exists, and has done so for some 20 years it is not widely embraced by investigators of incontinence.

### **3.3 Prevalence of urinary incontinence**

This section reviews the literature on the prevalence of urinary incontinence from studies referring specifically to individuals living in the community (Wolin, 1969; Feneley *et al.*, 1979; Thomas *et al.*, 1980; Yarnell *et al.*, 1981; Vetter, Jones and Victor, 1981; Diokno *et al.*, 1986; Holst and Wilson, 1988; Jolleys, 1988; Mohide *et al.*, 1988; Simeonova *et al.*, 1990; Burgio *et al.*, 1991; Ju *et al.*, 1991; O'Brien *et al.*, 1991; Kok *et al.*, 1992; Brocklehurst *et al.*, 1993), studies involving individuals in the

community and in long term care institutions (Campbell, Reinken and McCosh, 1985; Hellstrom *et al.*, 1990), and studies involving individuals in long term care institutions only (Isaacs and Walkey, 1964; Ouslander *et al.*, 1982; Fernie *et al.*, 1983; Borrie and Davidson, 1992). Prevalence rates measure the number of people in a population who have incontinence at a given time (Mausner and Bahn, 1974). Incidence rates will be briefly discussed in a later section. Table 3.1 provides a brief description of these prevalence studies indicating the location and subjects involved, definition of urinary incontinence, method of information gathering and the overall prevalence. The questions asked of the literature included in this review were, do the prevalence studies to date offer a consistent and precise specification of the prevalence of urinary incontinence? and, if they do not, why is this? As discussed earlier in section 3.2 the definition of urinary incontinence as given by the International Continence Society (Anderson *et al.*, 1988) has been available for 20 years, nevertheless, as seen in Table 3.1 its use has not been widespread. In fact no common definition could be established from the studies reviewed.

Some studies used the International Continence Society definition of incontinence (Holst *et al.*, 1988; Mohide *et al.*, 1988; Fernie *et al.*, 1983; Borrie *et al.*, 1992; Molander, 1993), however, Brocklehurst *et al.*, (1985) did not provide any definition of incontinence in their study. Feneley *et al.*, (1979) defined incontinence as “*the involuntary leakage or excretion of urine or faeces in inappropriate places or at inappropriate times, consisted of either dribbling incontinence or two or more episodes of incontinence in the previous month*”. They also included patients who used catheters and appliances. A similar definition was adopted in the work by Thomas *et al.*, (1980), although they did not include individuals who used catheters or appliances. The definition of urinary incontinence given by Diokno *et al.*, in their 1986 study was less specific than the Feneley *et al.*, (1979) and Thomas *et al.*, (1980) definitions and resulted in a much higher prevalence rate of 30%, compared to a prevalence rate of 5.4% in the Feneley *et al.*, (1979) study and 8.5% in the Thomas *et al.*, (1980) study. A number of diverse and somewhat vague definitions were given by Jolleys (1988), Simeonova *et al.*, (1990), Ju *et al.*, (1991), O'Brien *et al.*, (1991) and Kok (1992) in their studies in the community. Wolin (1969) used his own

definition of stress incontinence, in his study which focused specifically on this syndrome. The remaining community studies did not provide a definition of incontinence but asked questions of the population studied e.g ‘do you wet yourself?’ (Vetter *et al.*, 1981). Of the studies undertaken in the community and long term care institutions, one gave the definition of incontinence as “*involuntary leakage objectively confirmed by use of a pad test*” (Hellstrom *et al.*, 1990), whilst the other asked the question “*Do you have any trouble controlling your water or bowel?*” (Campbell *et al.*, 1985). Of the studies in long term care institutions two used the International Continence Society definition (Femie *et al.*, 1983; Borrie, 1992). Isaacs *et al.*, (1964) used a grading system asking how frequently an individual was incontinent, whilst Ouslander *et al.*, (1982) gave a fairly non-specific definition which mentioned inclusion of individuals using urethral catheters.

The definitions of urinary incontinence used in these studies varies and will therefore influence rates of prevalence. Use of the International Continence Society definition of incontinence could limit over estimations of prevalence whilst some of the non specific definitions of incontinence (Wolin, 1969; Simeonova and Bengtsson, 1990; Ju *et al.*, 1991; O'Brien *et al.*, 1991; Kok, 1992), may lead to over-estimations of the prevalence of urinary incontinence. The types of questions used as a method of determining sufferers of urinary incontinence may also influence the rate of prevalence, for example, “*Do you wet yourself?*” (Vetter *et al.*, 1981) may elicit a negative response, because the respondent feels embarrassed at the way the question is posed. More consistent prevalence rates would probably be obtained with the increased use of a widely accepted and recognised definition of incontinence, as given by the International Continence Society, although quantification within this definition would be necessary in order to exclude transient or illness-related incontinence.

Variation in prevalence may also be due to the method of data collection. A variety of methods of data collection were used in the studies cited, and comprised questionnaires, interviews and verbal reports from health care workers. The reliability and validity of data collection procedures is rarely referred to, although Thomas *et al.*, (1980) stated that, in order to validate their questionnaire they invited 237 adults to



agree to an interview by one of the survey team nurses. Jolleys (1988) claimed to have validated her questionnaire by telephone interviews with 20% of women involved in the study. Only Hellstrom *et al.*, (1990) validated their subjective outcome measure with the objective outcome measure of pad weighing. The major difficulty with relying solely on subjective accounts of self-reported involuntary urine loss is that each individual may have a differing opinion on the extent of urine loss constituting a problem. Therefore using subjective outcome measures alone is an unreliable measure of treatment outcome. Though among the prevalence studies included in this review only one (Hellstrom *et al.*, 1990) used both subjective and objective outcome measures, four other studies claimed to use the International Continence Society definition of incontinence (Holst *et al.*, 1988; Mohide *et al.*, 1988; Fernie *et al.*, 1983; Borrie, 1992). As this definition refers to urine loss being 'objectively demonstrable' and these studies did not provide objective outcome measures, the I.C.S. definition was used inappropriately by these authors.

Response rates where indicated were high and ranged from 45% (Brocklehurst *et al.*, 1993), to 98% (Cutler *et al.*, 1992). Postal questionnaires elicited a high response rate, 93% (Feneley *et al.*, 1979), 89% (Thomas *et al.*, 1980; Jolleys, 1988) 79% (O'Brien *et al.*, 1991) and 69% (Kok *et al.*, 1992). Jolleys' sample was recruited from her own list of patients and may not be a representative sample. Response rates for interview of subjects by nurses or medical students were also high, 95% (Yarnell *et al.*, 1981), 95.4% (Vetter *et al.*, 1981), 65.1% (Diokno *et al.*, 1986), 75.6% (Holst *et al.*, 1988), 60% (Burgio *et al.*, 1991), 80.4% (Ju *et al.*, 1991), 69% (Brocklehurst *et al.*, 1993), and 94.9% (Campbell *et al.*, 1985). The response rate of the Hellstrom *et al.*, (1990) study, which involved an objective outcome measure was 64.8%. The high response rates elicited from postal questionnaires may have been due to their relative anonymity and the low response rate of the study involving an objective outcome measure may be due to the delicate nature of the subject of incontinence and the unwillingness of individuals to demonstrate objectively their urine loss.

**Table 3.1. Description of a selection of prevalence studies of urinary incontinence undertaken in the community.**

AUTHOR	SAMPLE	LOCATION	DEFINITION	METHOD	RESPONSE RATE	OVERALL PREVALENCE
Wolin LI (1969)	n=4211 age 17-25	Nursing schools, New York and Denver, Colorado	Stress incontinence defined as accidental passing of urine unrelated to voiding	Questionnaire	Not given	50.7%
Fencley <i>et al.</i> , (1979)	Recognised: All men and women known to health care agencies n=368	One group practice	'Involuntary excretion or leakage of urine of faeces in inappropriate places or at inappropriate times'	Recognised: I/C workers asked to report cases of incontinence, no questions specified. Unrecognised: Postal survey	Not given	1%
	Unrecognised: All men and women aged 5+ n=7000	Bristol UK			93%	5.4%
Thomas <i>et al.</i> , (1980)	Recognised: All men and women over 15 years known to h/c agencies n=1944	London boroughs Brent, Harrow UK	'Regular' incontinence=involuntary excretion or leakage of urine in inappropriate places or at inappropriate times, 2 or more times a month regardless of quantity lost	Recognised: information gained from I/C workers, no indication of questions asked. Unrecognised: Postal questionnaire	Not given	Age 15-64 W=0.2% M=0.1% 65+W=2.5%, M=1.3% Regular incontinence W=8.5% M=3.3%
	Unrecognised: All individuals over 5 years n=17694	12 general practices in England and Wales			89%	
Yarnell <i>et al.</i> , (1981)	n=1022 women aged 18+	South Wales	No definition. Asked questions: 'Do you ever have to rush to the toilet to pass water? Do you ever lose any water before reaching the toilet?'	Interviewed by nurse using a standard questionnaire.	95%	45%

Vetter <i>et al.</i> , (1981)	n=1280 men and women age 70+	2 general practices in South Wales	No definition but 3 questions asked: Do you wet yourself? How often? Is it just a few drops?	Interviewed using a standard questionnaire.	95.4%	14% W=18% M=7%
Campbell <i>et al.</i> , (1985)	n=559, random sample, men and women 65+	Gisborne New Zealand	No definition, question asked: 'Do you have any trouble controlling your water or bowel?'	Interview and 1 year follow up	94.9%	11.6%
Diokno <i>et al.</i> , (1986)	n=1955, random sample, men and women 65+	Wastenaw, County, Michigan, USA	'Loss of urine of any volume beyond voluntary control'	Household Interview	65.1%	30% M=18.9% W=37.7%
Holst <i>et al.</i> , (1988)	n=851, random sample of women aged 18 years+	Dunedin, New Zealand	ICS definition (Anderson <i>et al</i> 1988)	Telephone interview by a medical student using a standard questionnaire. Questions referred to the last 12 months.	75.6%	31%
Jollleys (1988)	All women over 25 and women under taking the OCP. Registered 1 GP practice 1/5/87 n=833	Rural general practice in Leicestershire	Inappropriate leakage of urine	Postal questionnaire to women, validated by phone interviews to 20%	89%	41%
Mohide <i>et al.</i> , (1988)	Men and women who had received home care services age 16+, n=2850	Southern Ontario	ICS definition	A 2 page pre-coded continence assessment form completed by community nurses by direct patient observation, patient reports and reports from family and other professionals.	97%	22%

Helstrom <i>et al.</i> , (1990)	n=954, men and women born between 1/7/01 and 30/1/02	Goteberg, Sweden	'Occurrence of involuntary urine leakage objectively confirmed by use of a pad test'	Detailed history taken by a urotherapist and assessment using a pad test	64.8%	37.2% Institution = 83.9% Home = 29.4%
Simencova <i>et al.</i> , (1990)	Women age 18+ n=550	Health care centre Backa, Gothenburg, Sweden	'Involuntary voiding of urine'	Questionnaire handed to women attending the II/C centre	82%	44%
Burgio <i>et al.</i> , (1991)	n=541, women age 42-50	Pittsburgh, USA	No definition, question asked: 'Have you ever leaked, even a small amount of urine involuntarily?'	Initial telephone interview, med history taken in home followed by ind interviews and health questionnaire.	60%	58.4%
Ju <i>et al.</i> , (1991)	n=1143, elderly aged 65-85+	One postal area of Singapore	'Leakage of urine 2 or more times in the past month'	Interview by medical students	80.4%	4.6%
O'Brien <i>et al.</i> , (1991)	n=5661, random sample of men and women age 35+	One rural and one urban practice in Somerset	'Two or more leaks of urine in any one month'	Postal questionnaire	79%	M=4.4% W=16.4%
Cutler <i>et al.</i> , (1992)	Sample drawn from 2 studies: 1) premenopausal women in a menopause study in 1979, mean age 48.7 n=57 2) women in a wellness evaluation, n=194 Sample n=194	1) Stanford menopause study  2) Healthy women in the Athena Wellness program, Pennsylvania.	1) Loss of urine sometimes occurs, does this ever happen to you?  2) Do you have trouble with involuntary urine loss?	1) Face to face interview with researcher.  2) Questionnaire completed in private at the wellness clinic.	98%	1)60%  2)52%

Rekers <i>et al.</i> , (1992)	n=1299, women aged 35-80 years	Zoetermeer, Netherlands	Involuntary loss of urine	Postal questionnaire	67.7%	26.5%
Kok <i>et al.</i> , (1992)	n=763, random sample of community dwelling women aged 60+	Amstelveen, Netherlands	'Involuntary loss of urine at least twice a week irrespective of amount lost'	Postal questionnaire	69%	23.5%
Brocklehurst <i>et al.</i> , (1993)	n=4007, random sample of men and women aged 30+	178 constituency sampling points throughout GB.	No definition. Questions asked: 'Have you ever suffered from bladder problems? e.g. wet pants, damp pants, leaking?'	Home interview	69%	W=14% M=6.6%
Lagacc <i>et al.</i> , (1993)	n=2830, men and women age 20+ visiting Dr during a specified 8 week period.	Five family practice offices, Upper Peninsula, Michigan.	Any degree of incontinence in the past twelve months.	Questionnaire, completed in practice office.	77.8%	33% W=43% M=11%
Molander (1993)	n=7459, random sample of women aged 46-85 years.	Göteborg, Sweden.	ICS definition.	Postal questionnaire. Subsample (n=350) of incontinence sufferers were assessed, completed a 48 hour pad test, diary and cough provocation test.	74.6%	12.1%-25%, rising with age.
Sandvick <i>et al.</i> , (1993b)	n=182, women aged 20+	Rissa, Norway.	No definition. Questions asked about duration, frequency and amount of leakage and impact.	Postal questionnaire including severity index.	77%	29.4%

Roe <i>et al.</i> , (1996)	n=12,529 adults aged 18 and over.	Random sample obtained from patient registers of two Family Health Services Authorities.	Question: Have you ever suffered from bladder problems or incontinence? If yes, 6 adapted questions from Thomas <i>et al.</i> , were asked.	Postal questionnaire	53%	23% (ever experienced)
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As shown in Table 3.1 there were a number of differences in sample size, and inclusion according to age and gender. These differences need to be borne in mind when a comparison of prevalence rates is made. It can be concluded that despite the wide variation of definition, methods of data collection, sample size and location that have been found in this review of prevalence studies, urinary incontinence is a common problem, particularly in women and in the elderly.

### **3.4 Incidence of urinary incontinence**

Incidence rates provide a measure of the rate at which people without incontinence develop incontinence over a period of time (Mausner and Bahn, 1974) showing the number of new cases of a disease over a period of time. Less literature is available on the incidence of urinary incontinence, and it has not been studied as fully as the prevalence (Herzog and Fultz, 1990).

Two U.S. studies of the incidence of urinary incontinence in the community dwelling population have been undertaken. Herzog, Diokno, Brown, Normolle and Brock (1990b) interviewed a sample of 1,956 people aged 60 and over at annual intervals. Incidence rates reported at one year were approximately 20% for women and 10% for men, remission rates were 12% for women and 30% for men.

In a study by Burgio *et al.*, (1991) previously described in the prevalence section, a follow up of 206 women aged 42-50 showed that over three years, 8% developed a mild form of urinary incontinence, this study did not report remission rates. Ouslander, Palmer, Rovner and German (1993) studied the incidence of urinary incontinence in nursing home settings and found at one year 16% of females and 46% of men. Remission rates were dissimilar from the Herzog *et al.*, (1990b) study with 23% of womens' urinary incontinence and 14% of mens' urinary incontinence resolved at one year.

Further studies to determine the incidence of urinary incontinence are required. It may be useful to undertake prevalence and incidence studies using the same initial sample

as Burgio *et al.*, (1991) study showed. An incidence study undertaken using a large community dwelling U.K. population may provide useful information highlighting factors which may pre-dispose to the development of urinary incontinence, such a study is currently being undertaken by the Leicestershire Medical Research Council (MRC) Incontinence Study team.

### **3.5 Causes and types of urinary incontinence**

Continence is a skill acquired during childhood through a process of learning and maturation (Smith and Smith, 1987). This section describes the causes and types of urinary incontinence. Incontinence results as a loss of this skill and may be due to a variety of causes, including physiological factors, disorders of bladder function and factors which affect an individual's ability to cope with the bladder (Cheater, 1992a). Urinary incontinence may be divided into two categories, transient and established. Transient incontinence refers to sudden onset urine loss usually related to acute illness e.g. urinary tract infection or constipation, once the underlying condition is successfully treated the incontinence will disappear. By contrast, established incontinence has a longer history, often associated with long term disease and is due to abnormalities in the function of the detrusor, the outlet or both of these e.g. pelvic floor weakness, stroke, dementia (Resnick and Yalla, 1985; Brocklehurst, 1990; Tobin, 1992; Houston, 1993).

#### **3.5.1 Physiological causes of incontinence**

There are a number of physiological factors which affect bladder function and these may be divided into four main types:-detrusor dysfunction (urge incontinence), stress incontinence, outflow obstruction and neurogenic bladder. Each different type of incontinence results in the involuntary loss of urine, but have underlying causes and present with varying symptoms (Palmer, 1990). Each type of incontinence will be described in the following section.

#### **3.5.2 Detrusor dysfunction**

The term detrusor dysfunction refers to overactive detrusor contractions which the individual is unable to suppress. These contractions may occur spontaneously during



bladder filling or may be provoked by acts which raise the intra-abdominal pressure (e.g. coughing, jumping). Individuals with this condition normally experience symptoms of urgency (a strong desire to void), frequency, nocturia, nocturnal enuresis and urge incontinence (Cheater, 1992a; Palmer, 1990). It has been claimed that detrusor instability is one of the most common forms of urinary incontinence (Castleden and Duffin, 1981a; Fossberg, Sanders and Beisland, 1981; Resnick and Yalla, 1985; Malone-Lee, 1994) and may be due to an impaired sensory input caused by urinary tract infection, bladder stones, faecal impaction or prostatic enlargement. Detrusor instability may also arise with loss of the normally inhibiting impulses from the micturition centre in the brain. This leads to inappropriate activation of the sacral reflex arc causing the bladder to contract before micturition is initiated by the individual resulting in incontinence. The causes of detrusor instability include stroke, dementia and Parkinson's disease (Williams and Pannill 1982; Tobin 1992).

### **3.5.3 Stress incontinence**

The International Continence Society defines stress incontinence as the involuntary loss of urine occurring when, in the absence of a detrusor contraction, the intravesical pressure exceeds the maximal urethral pressure (Anderson *et al.*, 1988). The symptom of stress incontinence indicates the patient's statement of involuntary loss of urine during physical exertion, the sign denotes the observation of loss of urine synchronous with physical exertion e.g. exercise, coughing. Stress incontinence is characterised by the loss of small to moderate volumes of urine on physical exertion (Resnick and Yalla, 1985). Stress incontinence is considered the most prevalent type of urinary incontinence in women (Yarnell *et al.*, 1981; Diokno *et al.*, 1986; Cardoza, 1991; Houston, 1993), although prevalence rates vary considerably due to differences in definition, data collection methods and sample in the research studies, as described in the previous section. Whilst stress incontinence is fairly common in women it is less common in men, but may arise following prostatic surgery (Appel and Baum, 1992). Wolin (1969) in a study involving 210 young nulliparous nursing students concluded that stress incontinence in young healthy females is more prevalent than previously expected and that it may present as a symptom of an underlying urinary tract infection.

Stress incontinence is associated with congenital weakness, pregnancy, vaginal delivery, the menopause and obesity (Yarnell *et al.*, 1981; Snooks, Swash, Mathers and Henry, 1990; Cardozo, 1991; Bump, Sugarman, Fantl and McClish, 1992). Snooks, Setchell, Swash and Henry (1984), Snooks *et al.*, (1990) concluded as a result of their studies that pudendal nerve damage rather than parity was a contributing causal factor in the development of stress incontinence in women, although Yarnell *et al.*, (1981) and more recently Foldspang, Mommsen, Lam and Elving (1992) maintain that parity remains an important factor in the development of stress incontinence. Bump *et al.*, (1992) in their study showed a direct correlation between surgically induced weight loss and easing of symptoms of stress incontinence. post- menopausal atrophy of muscles and ligaments due to oestrogen deficiency may also contribute to the development of stress incontinence in some women (Stanton, 1984).

#### **3.5.4 Outflow obstruction**

An obstruction to the outflow of urine from the bladder (uncommon in women) may be due to an enlarged prostate, urethral stricture or stenosis or chronic constipation (Cardozo, 1991). Outflow obstruction gives rise to a number of presenting symptoms, and the patient reports incomplete bladder emptying, dribbling of urine, hesitancy and poor stream (Palmer, 1990; Cardozo, 1991). It has been suggested that symptoms of outflow obstruction may be caused by psychological or emotional factors which can manifest themselves as obsessive-compulsive disorders treatable with anti-depressant medication (Epstein and Jenike, 1990), although there is minimal supportive evidence for this suggestion. Detrusor instability can be associated with outflow obstruction (Brading and Turner, 1994).

#### **3.5.5 Neurogenic bladder**

“Neurogenic bladder” refers to those bladder disorders caused by neurological disorders which involve damage to the peripheral nerves of the bladder, resulting in the detrusor muscle becoming underactive or flaccid and unable to sustain an adequate contraction during bladder emptying. This may result in large volumes of

residual urine and overflow incontinence (Castleden and Duffin, 1981a). Among the more common causes of neurogenic bladder dysfunction are stroke, Parkinson's disease, diabetes mellitus, multiple sclerosis, chronic brain failure and spinal cord trauma (Appel and Baum, 1992).

### **3.6 Factors associated with the development of urinary incontinence**

Certain factors may affect a person's ability to cope with the bladder which may in turn lead to urinary incontinence, these factors may result in Functional Incontinence, that is, when the function of the lower urinary tract is intact but other factors result in the involuntary loss of urine. Decreased mobility, impaired mental or psychological state, environmental or care factors may lead to functional incontinence (Consensus Conference, 1989; Baum, Suarez and Appel, 1991; Appel and Baum, 1992; Cheater, 1992a). In the following section each of these factors will be described and their impact highlighted.

#### **3.6.1 Mobility**

It has been recognised that impaired mobility or restricted access to the toilet may lead to urinary incontinence (McCormick, Engel, Burgio and Burgio, 1985; Vehkalahti and Kilveda, 1985), as can poor manual dexterity (Duffy, 1990). Immobility may be a result of recent illness, surgical operation or long term immobility due to disease or old age (Cutner and Cardozo, 1990). Isaacs and Walkey (1964) and Ouslander (1991) in their studies of incontinence in elderly hospital patients found that incontinence occurred most often in those unable to walk, dress, or feed themselves independently. They also found a relationship between the presence of brain damage which may lead to reduced mobility and incontinence (O'Donnell, Drachman, Barnes, Peterson, Swearer and Lew, 1992; Ouslander 1991; Ouslander, Palmer, Rovner and German, 1993). Wyman, Elswick, Ory, Wilson and Fantl (1993) recognised the association between slower mobility and frequent incontinent episodes.

### **3.6.2 Mental state**

Impaired mental function, dementia, anxiety and depression have been associated with incontinence (Brocklehurst and Dillane, 1966; Berrios, 1986; Barer, 1989; McGrother, Jagger, Clarke and Castleden, 1990; Ouslander *et al.*, 1993). Certain diseases which affect mental function, for example stroke, multiple sclerosis and Alzheimers disease may result in urinary incontinence (O'Donnell *et al.*, 1992; Ouslander, 1990). In addition cognitive impairment associated with Alzheimers disease may also result in inability to locate an appropriate place to void (Duffy, 1990, Ouslander *et al.*, 1993). Depression and anxiety have been associated with urinary incontinence (Macauley, Stern, Holmes and Stanton, 1987) although it is difficult to determine whether depression causes incontinence or is a consequence of it. This would be a useful area for further research.

### **3.6.3 Psychological factors**

Psychological factors may also have an effect on an individual's continence status (Lagro-Janssen, Debruyne and van Weel, 1991a). It has been recognised that certain factors especially in the elderly, related to bereavement, disorientation or hospitalisation may contribute to episodes of urinary incontinence (Ory, Wyman and Yu, 1986). However, Wells (1984) warned against attributing the cause of incontinence to a psychological disorder without exploring possible mechanical causes. Newman, Lynch, Smith and Cell (1991) suggest that urinary incontinence is a cause of depression and psychological problems in many individuals and presents a major distress for sufferers (Vinsnes and Hunskaar, 1991; Macaulay *et al.*, 1987). Sufferers of urinary incontinence are likely to experience psychological effects as a result of their incontinence for example they may lose self-esteem and self confidence (Yu, Kaltreider, Hu, Igou and Craighead, 1989). Little empirical research has been undertaken to investigate the full psychological effects of incontinence on sufferers.

### **3.6.4 Environmental factors**

Environmental factors may act as potential barriers to continence, especially in the elderly (Williams and Pannill, 1982; Brink and Wells, 1986; Turner-Stokes and

Frank, 1992). Chair height, distance to the toilet and dirty or unsafe facilities can create a hostile environment for maintaining continence (Palmer, 1990; Consensus Conference, 1989). Roberts (1989) suggests that toilets sited away from living areas may discourage individuals from using the toilet frequently. Wells (1975) in a study of 13 elderly care wards found that 83% of toilets were too small for a wheelchair and 43% of beds were further than 12 metres away from the toilet. Chamberlain and Stowe (1982) investigated the toilet and bathroom facilities of 21 surgical and medical wards, they found that the ratio of patients to toilets varied from one toilet for every four patients to one toilet for every sixteen patients. However, a study by Vetter *et al.*, (1981) found that urinary incontinence was not significantly associated to the siting of toilets. A more recent study by Wyman *et al.*, (1993) investigated the relationship between incontinence and distance to the toilet in the community dwelling elderly and found those near the toilet suffered more episodes of incontinence, which offered interesting support for Vetter *et al.*, (1981) findings. Further study would be useful in this area to determine the effect of toilet location and its impact on urinary incontinence.

### **3.6.5 Carers**

Carers' expectations of the inevitability of urinary incontinence especially among the elderly can perpetuate the cycle of incontinence (Tarrier and Lamer, 1983; Mitteness, 1987; Palmer, 1990). Care of patients who suffer from urinary incontinence is time consuming and can cause stress among staff (Yu, Johnson and Kaltreider, 1991). Staff may reinforce patients' feelings of low self esteem by intimating that an episode of urinary incontinence is inconvenient or distasteful. General staff attitude towards those individuals suffering from urinary incontinence is often one of functional care i.e. the use of incontinence pads rather than attempts to treat the underlying cause, and may be the result of poor education regarding incontinence (Cheater 1992b). Birgersson Bjurbrandt, Hammar, Wilderfors and Halberg (1993) in their study in which six women over 65 years of age resident in elderly care wards suffering from urinary incontinence were interviewed about how they felt about their incontinence and receiving help from the nurses, reported that the women felt ashamed of themselves and felt in a state of continuous vulnerability regarding their intrinsic value and

autonomy. The study suggested that the management of such cases could be improved by sensitive, individualised nursing care, rather than reinforcement of negativity. Further research on nurse attitudes to incontinence may highlight areas for achievable improvement.

### **3.7 Factors influencing bladder function**

There are a number of other factors which may influence bladder function, and include urinary tract infection, faecal impaction, drug therapy, endocrine disorders and ageing. Each will be described in the following section.

#### **3.7.1 Urinary tract infection**

Urinary tract infection may lead to transient urinary incontinence (Brocklehurst, 1978; Ouslander, 1986). An infection may cause a toxic confusional state, especially in the elderly or may lead to sensory urge incontinence resulting in frequency, urgency, nocturia and dysuria (Cutner and Cardozo, 1990; Tobin, 1992). It is thought that urinary tract infection causes sensory urge incontinence by sensitising the stretch receptors in the bladder (Diokno, 1988). However it has not been proven that urinary tract infection is a cause of urinary incontinence (Norton, 1992), although Wolin (1969) in his study found that 19% of the sample of nurses had a positive test for bacteriuria on two occasions and concluded that stress incontinence in young women was a symptom of urinary tract infection, 16% of his sample suffered from daily stress incontinence although 50% reported 'some degree' of stress incontinence. It has been suggested that treatment of urinary tract infection secondary to residual urine caused by bladder dysfunction will have no effect on incontinence, which is likely to recur. It is also noted that many patients who are incontinent have incidental bacteriuria, the treatment of which will not improve incontinence (Burton, 1984). Individuals suffering from urinary incontinence may reduce their fluid intake in the hope that they will reduce their episodes of incontinence, but dehydration itself concentrates urine, which may irritate the bladder wall actually precipitating episodes of incontinence rather than avoiding them. Bernard (1994) recently concluded that the precise role of bacteriuria in incontinence remains unclear.

### **3.7.2 Faecal impaction**

It has been claimed that faecal impaction causes urinary incontinence (Willington, 1980; Diokno, 1988). It has been suggested that outflow obstruction may occur because of faecal impaction, with a hard mass of faeces pressing forward on to the bladder and urethra (Diokno, 1988; Wells, 1988; AHCPR, 1992), causing symptoms of outflow obstruction, retention of urine and overflow. However, the exact mechanisms by which constipation can lead to urinary incontinence have not been fully investigated.

### **3.7.3 Drug therapy**

Drug therapy may adversely affect bladder function especially in the elderly where polypharmacy is common (Shimp, 1988). Side effects of drugs such as anticholinergics and anti-depressants may result in incontinence by relaxing the musculature involved in sphincter control and reducing contractability of the smooth muscle. Alcohol may suppress cognitive function and thereby decreasing the ability to inhibit bladder emptying (Burton, 1984). In addition alcohol has a diuretic action and may cause sedation and immobility (AHCPR, 1992). Pharmacological agents can both improve or contribute to the problem of urinary incontinence. For example, Prazosin may result in drug induced stress incontinence by decreasing sphincter tone in the proximal urethra (Dwyer and Teele, 1992), whilst Propanalol (Beta-blocker) may result in drug-induced urinary retention (Foster, 1990). Both drugs are commonly used in the management of elderly conditions. Diuretics are thought to predispose towards urgency, frequency and urge incontinence (Ouslander, 1986; AHCPR, 1992). Diuretics affect patients with detrusor instability in particular (Diokno, Normolle, Brown and Herzog, 1990). Opiates may cause constipation and faecal impaction. Psychotropic or sedative drugs may cause over sedation or immobility leading to confusion and impairing the individual's ability to walk to the toilet (Palliard and Resnick, 1984; AHCPR, 1992). Caffeine is a diuretic which also has an exciting effect on the detrusor muscle and may exacerbate detrusor instability (Creighton and Stanton, 1990).

### **3.7.4 Endocrine disorders**

Endocrine disorders may cause or worsen symptoms of urinary incontinence. The onset of diabetes mellitus and insipidus may cause polyuria which affects bladder function and predisposes to urge incontinence. In sufferers of diabetes there may be a loss of sensation and development of a neurogenic bladder. They may also demonstrate detrusor hyperreflexia which requires a large urinary volume to provoke the response to void (Diokno, 1988). Post-menopausal atrophy of muscles and ligaments due to oestrogen deficiency may contribute to the development of stress incontinence in some women (Brocklehurst, 1984; Robinson, 1984). Cardozo, Versi, Tapp and Studd (1986) concluded from their study that urge incontinence resulted from oestrogen withdrawal, however, Robinson (1984) in her study of 219 women with a mean age of 79 years attending a continence clinic concluded that oestrogen deficiency was only likely to contribute to incontinence in the presence of other factors. Fantl, Cardozo and McClish (1994) conclude that post- menopausal hypo-oestrogenism affects urethral closure which may result in urinary incontinence.

### **3.7.5 Age related factors**

Age related changes in the urinary tract are thought to increase its vulnerability to the causal factors of urinary incontinence (Bernard, 1994). Frequent uninhibited bladder contractions and increased prostate size, accompanied by a decrease in bladder capacity and flow rate, lead to a greater susceptibility to urinary incontinence, especially when associated with functional or environmental factors (Consensus Conference, 1989). With increasing age, the kidneys' ability to concentrate urine decreases resulting in larger volumes of urine in the bladder (Houston, 1993). These larger volumes of urine along with age linked hypotrophic changes to the detrusor muscle may lead to decreased muscle tone resulting in frequency and nocturia (Houston, 1993). Brocklehurst (1982) demonstrated that closing pressure of the urethra diminishes with age in women and suggested this was due to the replacement of smooth urethral muscle by connective tissue associated with ageing (Brocklehurst, 1982). Cortical neuropathy in the elderly may result in urge incontinence (Griffiths, McCracken, Harrison, Gormley, Moore, Hooper, McEwa and Triscott, 1994). Whilst



age related changes may lead to urinary incontinence it is not an inevitable consequence of the ageing process (Cheater, 1992a).

It may be concluded from the literature reviewed that urinary incontinence can be caused and exacerbated by a number of very different factors, from physiological causes to environmental factors or carers attitudes. When assessing an individual with urinary incontinence it is therefore necessary to determine the causal factors leading to their incontinence in order to effectively plan their care.

### **3.8 Assessment of urinary incontinence**

Assessment of urinary incontinence is a necessary preliminary step when planning the care of an individual sufferer (Resnick, 1990; Duffin, 1992; AHCPR, 1992). It is recognised that many members of the health care team are involved in the assessment of individuals suffering from urinary incontinence, and include doctors, physiotherapists, occupational therapists, social workers as well as nurses (Moody, 1990). This section addresses the methods currently used in making a nursing assessment of those who suffer from urinary incontinence. In order to make an accurate assessment, a thorough continence history and full physical examination are required (Lee, Owen, Choo and Jayaratnam, 1991). The assessment is then used to plan the management and treatment of the individual sufferer (Duffin, 1992).

In order to gain a reliable and accurate response to interview questions, Duffin (1992) suggests that good interviewing skills are required from the nurses, clarification of questions and rewording of sentences sometimes being necessary. Norton (1986) suggests that 'mutually understood terminology' should be established before an assessment can be made. In addition to gaining an assessment through interview with the patient, observations should be made of the patients' mood, attitude, beliefs, tolerance and coping ability (Gordon, 1982), and should be recorded.

Incontinence has a devastating effect on the lifestyles of sufferers with loss of dignity and self esteem (Duffin, 1992). The development of incontinence in an elderly person being cared for at home may be the deciding factor for their admission to hospital or

continuing care, because the family can no longer cope with the added burden and stress which incontinence brings (Tattersall, 1985). It has also been shown that those individuals who do suffer from urinary incontinence within the community have far less social contact than non-sufferers in the form of shopping or visiting (McGrother, Castleden, Duffin and Clarke, 1987; Wyman *et al.*, 1987; Lee *et al.*, 1991).

Chronic urinary incontinence, whilst not a life threatening condition, has been found to be a source of 'appreciable morbidity' causing depression and anxiety which may become incorporated into a patient's lifestyle and personality (Macauley *et al.*, 1987; Macauley, Stern and Stanton, 1991). Macauley *et al.*, (1987) stated that such mood changes actually worsen the very condition by causing symptoms of urgency, frequency, nocturia and urge incontinence. Many elderly people accept incontinence as inevitable and untreatable (Kennedy, 1984). Psychological factors, can influence whether or not an individual suffers from urinary incontinence (Frewen, 1978 and Freeman and Baxby, 1982) .

### **3.8.1 Assessment interview**

When conducting an interview to establish an individual patient's continence status, each nurse will have a personal concept of what they consider to be priority questions. For this reason the use of an assessment tool in the form of a "check list" or "continence assessment form" has been recommended to standardise the procedure and allow storage of the information in an appropriate and safe manner (Duffin, 1992). Norton (1980) suggests much information regarding incontinence will be gathered routinely in a general nursing assessment and therefore information should not be repeated in a separate 'continence assessment'. However, considering the great misery and discomfort caused by incontinence, a thorough continence assessment would seem an appropriate way to challenge the problem.

It has been reported that nurses lack skills in communicating with their patients and that there is a great difference between the skills required for social interaction and those required for professional, patient/nurse interaction (Faulkner, 1988). Incontinence is a sensitive subject. It is the loss of this most fundamental function

which can cause loss of self esteem and dignity (Faulkner, 1988), and for this reason the assessment interview should be undertaken by the nurse with tact and sensitivity (Moody, 1990; Faulkner, 1988).

### **3.8.2 History of urinary incontinence**

When assessing an individual with urinary incontinence it is important to determine the history and cause of the symptoms. Anxiety, depression and interpersonal difficulties may contribute to the onset of urinary incontinence (Macauley *et al.*, 1987). Childbirth may precede the onset of stress incontinence following multiple deliveries, large babies or extended labour (Norton, 1986; Snooks *et al.*, 1984;1990; Swash, 1988; Dimpfl, Hesse and Schussler, 1992).

Bladder dysfunction and incontinence are common in sufferers of certain neurological diseases e.g. Multiple Sclerosis (Ewing, Bultitude and Shuttleworth, 1983; Kornhuber and Schutz, 1990), Parkinson's Disease, spinal injury (O'Flynn, Murphy and Thomas, 1992), and cerebral palsy. Incontinence occurs in these diseases from damage of the higher centre which controls continence via the local sacral reflex arc (Duffin, 1992). In addition impaired mobility and impaired manual dexterity associated with these diseases may make reaching the toilet more difficult (Campbell *et al.*, 1985). The possibility of dementia with its impairment of mobility and resulting incontinence (McGrother *et al.*, 1990), need to be considered when making an individual assessment.

Within an assessment specific questions should be asked to discover whether sneezing, coughing, laughing or lifting cause urine to leak which may indicate stress incontinence (Norton, 1986; Brocklehurst, 1972; Moody, 1990). Little or no warning of the need to pass urine may indicate urge incontinence. Once a bladder contraction occurs it provokes an urgent desire to pass urine. If these contractions are stronger than the urethral closure pressure, incontinence occurs (Brocklehurst, 1990). Mixed stress and urge incontinence may be found where these symptoms are mixed (Jolleys, 1988). Neurogenic bladder where poor bladder sensation means the first desire to void can occur when the bladder is over full, or be completely absent may cause large

volumes of residual urine, overflow incontinence and urinary tract infection (Brocklehurst, 1990).

### **3.8.3 Urinary tract infection**

When making an assessment it is important to discover whether a urinary infection is present, which can be established by routine culture or microbial urinalysis (Moody, 1990), presence of cloudy urine or foul smelling urine is indicative of the presence of infection (Roe, 1993a). If infection is suspected a mid-stream specimen of urine (M.S.U.) may be sent to the laboratory for microscopic culture and analysis of sensitivity to antibiotic therapy (Duffin, 1992; Lee *et al.*, 1991). The presence of dysuria and the form in which it presents should be recorded i.e. the presence of burning or scalding pain either before, during or after micturition.

#### *Poor urinary stream*

Poor stream of urine may be due to weak detrusor contractions which may in turn be due to disease e.g multiple sclerosis (Fowler, van Kerrebroeck, Nordenbo and Van Poppel, 1992), diabetes (Roberts, 1989), or the use of anti-cholinergic drugs (Andersson, 1988). Outflow obstruction due to retention of urine with overflow caused by prostatic enlargement (Blannin, 1987) may present with symptoms of poor stream, hesitancy and post- micturition dribble progressing to complete obstruction and retention with overflow (Roberts, 1989). An individual suffering from symptoms of prostatic enlargement may reduce their fluid intake in an attempt to reduce these episodes of micturition and dribbling, which serves to merely worsen the problem (Blannin, 1987).

### **3.8.4 Frequency volume charts**

The symptom of frequency of micturition has been described as 'voiding seven or more times during the waking hours' (Hilton and Stanton, 1981). Frequency of micturition may be recorded on a frequency volume chart where times of voiding, volumes of urine and episodes of wetness are recorded. The frequency volume chart provides a useful baseline when implementing a regular toileting regime to ensure that urine is passed before incontinence occurs, or to regain bladder control where

frequency is the major problem (Blannin, 1987). Nocturia, the need to awaken during the night to pass urine, may occur at any age. Incontinence may occur more frequently amongst the elderly because of poor mobility preventing the patient getting out of bed quickly, or due to suppression of awareness because they are taking night sedation (Duffin, 1992), and as a result of decreased bladder capacity (Brocklehurst, 1984).

Recording the number of incontinent pad changes in 24 hours may indicate the severity of incontinence (Duffin, 1992). Such enquiry may also establish the financial burden on the individual if they are purchasing pads themselves, which often takes the form of sanitary towels, which are quite inappropriate for the absorption of urine (McGrother *et al.*, 1987). Extra laundry generated by incontinence may place a burden on family and carers (Vetter *et al.*, 1981), which may ultimately lead to the family being no longer able to cope (Tattersall, 1985).

### **3.8.5 Fluid intake**

When assessing an individual with urinary incontinence it is necessary to establish their fluid intake for a typical 24 hours. It is common for sufferers of incontinence to reduce their fluid intake, often quite dramatically in order to reduce wetness (Norton, MacDonald, Sedgwick and Stanton, 1988; Duffin, 1992). A low fluid intake may lead to concentrated, smelly and possibly infected urine (Kennedy and Steidle, 1991). It has been suggested that this concentrated urine may irritate the bladder causing sensory urgency and frequency (Mundy, Stephenson and Wein, 1984; Roe, 1993a). Spangeler, Risley and Bilyew (1984) in their study of 16 incontinent nursing home residents, found that four of them were dehydrated. Specific types of fluid may affect a persons' continence status. Creighton and Stanton (1990) in their study of 30 women, found that caffeine, contained in coffee, tea and cola, had an excitory/irritant effect on detrusor smooth muscle in addition to its known diuretic effect. Alcohol may also affect continence status by depressing consciousness as well as having a diuretic effect (Roberts, 1989).

### **3.8.6 Medical history**

Obtaining a record of past medical history is essential as incontinence is a common feature of a number of medical conditions, for example neurological diseases such as multiple sclerosis and Parkinson's disease (Brocklehurst, 1984; Eardley, Kirby, Nagendram, Leeky, Youl, Chapple, Fowler and MacDonald, 1989). Diabetes can result in an increased urinary flow caused by the need to excrete glucose which can result in incontinence, worsened by an autonomic neuropathy (Roberts, 1989). A persons surgical history should also be recorded making specific reference to gynaecological surgery in women and prostatic surgery in men. Poor control and dribbling may occur following prostatic surgery, a thorough medical history would establish this (Blannin, 1987; Yarnell and St Leger, 1979). Yarnell and St Leger (1979) found that post- surgical incontinence was not uncommon in men following prostatic surgery and women following repairs for vaginal prolapse.

### **3.8.7 Social history**

Environmental difficulties may exacerbate existing incontinence (Williams and Pannill, 1982; Norton, 1986). Toilets which are positioned away from the living or bedroom area, which are poorly signposted and are cold, dirty, smelly and uncomfortable may lead an individual to avoid using the toilet until it is too late (Roberts, 1989). A change of environment caused by admission to a nursing home or hospital may cause anxiety, confusion and general disorientation leading to an individual being unable to locate an appropriate toilet in time. Reduced mobility may contribute to incontinence as may poor vision, which may affect locating a toilet (Cheater, 1992a).

### **3.8.8 Sexuality**

A positive attitude to incontinence by staff is essential. The effect of incontinence on sexual functioning and relationships can be devastating (Duffin, 1992), however this aspect is frequently ignored by health care professionals (Jacobsen, 1974). It has been suggested that an incontinent individual can lose self esteem resulting in loss of sexual drive, partners who act as carers may lose their sexual desire for their partner

who is now their patient (Blannin, 1987; Hilton, 1988), however such statements are largely anecdotal and require further, more stringent investigation.

### **3.8.9 Drugs**

Many drugs may disturb bladder function, for example diuretics given to an individual with an unstable bladder may result in urge incontinence (Ouslander, 1986). Sedatives can make an individual less aware of the need to visit the toilet (Palliard and Resnick, 1984). Anti cholinergic drugs may have the side effect of urinary retention, which should be noted (Duffin, 1992).

### **3.8.10 Bowel pattern**

When assessing an individual, their bowel pattern should be established as individuals who have reduced mobility and who are reducing their fluid intake because of their incontinence may be prone to constipation. In addition, in hospitals and nursing homes, lack of privacy and time alone to use the toilet may result in constipation due to a mass of faeces in the rectum which is also associated with outflow obstruction (Roberts, 1989; Barrett, 1992).

### **3.8.11 Skin**

Observation for skin rashes in the groin area should be made as part of the continence assessment. Skin rashes and soreness may occur due to urine soaked clothing being next to the skin (Duffin, 1992). A vaginal assessment should be undertaken to exclude atrophic vaginitis, often exacerbated by oestrogen deficiency and can result in sensory urgency in menopausal women (Ritch, 1989).

### **3.8.12 Objective assessment/urodynamics**

In addition to the interview, physical examination and completion of a frequency volume chart, further urodynamic investigations may be made. There is considerable discussion regarding the use of urodynamic testing in the diagnosis of urinary incontinence. The international continence society definition refers to 'objective demonstration' of urinary incontinence (Anderson *et al.*, 1988) and suggest that diagnosis cannot be confirmed without urodynamic investigation. A number of

studies have compared patient history and urodynamic assessment and concluded that urodynamic assessment is essential to confirm patient history (Bergmen and Bader, 1990; LeCoutour, Jung-Faerber, Klein and Renauld, 1990; Versi, Cardozo, Anand and Cooper, 1991; Summit, Stovall, Bent and Ostergard, 1992). A meta-analysis undertaken by Jensen, Nielsen and Ostergard (1994) comparing patient history with urodynamic tests concluded that patient history alone was not accurate in the diagnosis of urinary incontinence. The studies included in this meta-analysis used patients referred specifically for urodynamic testing and hospital treatment and as Resnick (1990) points out, such cases would be more complex than usual GP cases. Within the following section brief description will be given to some common urodynamic tests and studies relating to these tests will be described.

Urodynamic investigations can give a more accurate diagnosis of the type and cause of incontinence (Mundy *et al.*, 1984; Chapple and Christmas, 1990) and include pad tests which are often used to quantify the volume of urine lost by incontinence sufferers as they can objectively measure urine loss. James, Flack, Caldwell and Martin (1971) developed a system in which electrodes that were embedded in the pad could measure urine loss. Used in conjunction with a suitable recorder, this system could quantify both the urine lost and frequency of micturition. The device had the advantage of being usable while walking, sitting or resting in bed. Frazer, Haylen and Sutherst (1989) support the use of the simple pad weighing test where an individual wears a perineal pad and is asked to perform a variety of tasks including walking and coughing, having previously consumed large quantities (500-1000mls) of fluid. The pre-weighed pad is worn for two hours and then re-weighed to objectively measure the urine loss. Frazer *et al.*, (1989) concluded that the pad-weighing test overcomes inadequacies of individuals' subjective assessment of incontinence. However, Griffiths, McCracken and Harrison (1991) suggest 24 hour pad-weighing is a more sensitive method of demonstrating leakage than two hour pad tests, which can be unreliable especially in the elderly population where much of the incontinence is nocturnal and would be missed if only a two hour pad test was undertaken.



Post-void residual urine measurements may be made, voiding problems may be present if a high post-void residual is present. Residual urine may be measured by inserting a Jacques catheter into the bladder and draining any urine present (Duffin, 1992), or by using the less invasive method of an ultrasound of the bladder (Robinson, 1984). Bennes, Barnick, Curner and Cardoza (1990) suggested that bladder ultrasound should be used more often for obtaining measurements of residual urine. Urodynamic investigation involves a range of tests which measure bladder and sphincter pressure, capacity and urine flow rates (Chapple and Christmas, 1990). Brocklehurst (1990) suggests that not all patients, especially the elderly require complex urodynamic investigations in order to reach a diagnosis. Hilton and Stanton (1981) in their study assessing urinary incontinence in elderly women suggested that few elderly women gained benefits from undergoing urodynamic tests. Resnick (1990) suggests that the cause of urinary incontinence can usually be determined, even in complex patients without sophisticated urodynamic investigation. It would therefore seem reasonable only to perform such tests when all other types of assessment have been undertaken. There are a number of types of urodynamic tests, uroflowmetry or urine flow rate measurement is a relatively simple urodynamic test (Abbott, 1992). The patient is asked to void into a flowmeter which comprises of a commode chair and collecting funnel that enables the rate of flow and the volume to be recorded on a chart recorder. A poor flow rate in elderly men is often indicative of an enlarged prostate (Duffin, 1992; Abbott 1992).

Simple cystometry measures the pressure generated in the bladder during filling (Robinson, 1984). The patient is asked to pass urine before the investigation to ensure the bladder is completely empty then the post-void residual urine is drained and measured. Two catheters are inserted into the bladder, one carrying normal saline and filling the bladder and one measuring pressure. During the procedure the patient is asked to describe their bladder sensations, the first desire to void, feelings of urgency or pain (Chapple and Christmas, 1990). Bladder capacity is measured by the volume tolerated by the patient and is compared with recorded measurements (Duffin, 1992). Abbott (1992) argues that as the bladder is an intra-abdominal organ, it is subject to intra-abdominal pressure which may lead to inaccuracies in pressure measurements.

At the termination of cystometry urethral pressure and urethral closure pressure which prevents urine leakage may be measured along the urethra as the catheter is being removed (Chapple and Christmas, 1990). However, Brocklehurst (1984) and Malone-Lee (1989) see little diagnostic value in making this measurement, not least because there are several variations on method (Chapple and Christmas, 1990). Ambulatory urodynamic studies allowing the recording of bladder activity during normal filling cycles are currently under investigation, in relation to their role in assessment of the incontinent patient (Abbott, 1992). It has been suggested that these will provide a more accurate picture of an individual's urodynamic status (James, 1984; McInerney, Vanner, Powell and Stephenson, 1990).

Cystoscopy is always indicated for people with haematuria and no obvious cause. It will also exclude causes of sensory urgency in those suffering from urge incontinence. Castleden, Duffin and Asher (1981b) studied 100 referrals of individuals over 65 years attending an incontinence clinic and found no correlation between cystometric investigations and symptoms and physical signs. They concluded that urodynamic investigation is necessary in elderly incontinent patients before a treatment plan is decided. However, as Duffin (1992) points out no patient assessment would be complete without a full history being given by the patient which is accurately recorded within the notes. By assessing the patient's history, a decision can be reasonably made whether to pursue further, more invasive investigations. Several authors argue that initial diagnosis and the commencement of therapies can be undertaken in the majority of cases without the need for urodynamic testing (Resnick, 1990; Brocklehurst, 1990; Walters and Realini, 1992; Bernard, 1994). Without preliminary enquiry by interview, use of frequency volume chart and physical examination the decision to undertake invasive investigations could not reasonably be made. There is obviously a need for further research in this area, but the avoidance of expensive, invasive investigations would seem the most appropriate course of action until further evidence becomes available.

### **3.9 The promotion of continence**

The promotion of continence should be the aim of all health professionals and carers involved in the care of incontinent people. Continence promotion can take a number of forms and can be achieved through bladder re-education, pelvic floor muscle re-education the use of drugs and surgery or by a combination of any of these approaches. Within this review of the literature four modes of continence promotion will be reviewed, bladder re-education, pelvic floor muscle re education, use of drugs and surgery.

#### **3.9.1 Bladder re-education**

Bladder re-education is a behavioural approach for restoring continence by re-educating the bladder to a normal or improved pattern of voiding. It is an approach used for individuals suffering from detrusor instability although patients suffering from stress incontinence have also been shown to benefit from this approach (AHCPR, 1992). The symptoms of detrusor instability include urgency and frequency leading to an urgent desire to void, and often followed by involuntary loss of urine (Anderson *et al.*, 1988). Research findings have shown that bladder re-education programmes can cure or improve patients suffering from these symptoms. Hadley (1986) described four types of bladder re-education programmes:-Bladder training, habit retraining, timed voiding and prompted voiding, these modes of bladder re-education are briefly described before reviewing the current studies in this area.

##### ***Bladder Training***

Before undertaking a bladder training programme it is essential that the individual has a clear understanding of the cause of their incontinence and is aware that their bladder contractions are under the control of the brain. There are two forms of bladder training. The first uses a mandatory voiding schedule, where following baseline frequency volume chart recording the patient is given set times when he or she must use the toilet. The toilet may not be used at any other time even if incontinence occurs. Voiding is recorded on a chart and once the patient successfully remains dry the periods between voidings will be increased by 15 to 30 minutes. The second type of bladder training is self scheduling, this is again based on a baseline from a frequency volume chart but the patient themselves may choose to use the toilet more

frequently to avoid episodes of incontinence (Kennedy, 1992). Fantl, Wyman, McClish, Karkino, Elswick and Taylor (1991) demonstrated a 50% improvement in patients using this approach in terms of incontinent episodes, quantity of urine loss and associated symptoms.

### *Habit Retraining*

The patient is given a toileting schedule based on their frequency volume chart. The patient is asked to void at set times, usually one to two hourly, but is permitted to use the toilet if necessary. The charted results are used to adjust the pattern to suit the individual's needs, evaluate progress and reinforce motivation (Hadley, 1986). The AHCPR (1992) guideline does not distinguish between habit retraining and timed voiding.

### *Timed Voiding*

Timed voiding, often used amongst the elderly, consists of a fixed voiding schedule based on a completed frequency volume chart. The time interval is usually two hourly and remains unchanged (Kennedy, 1992). Timed voiding is mostly used for those patients with neurogenic bladders and certain triggers for bladder emptying may be required e.g. running water or stroking of the inner thigh (Hadley, 1986; Rooney, 1989; Menon and Tan, 1992).

### *Prompted Voiding*

Prompted voiding is often used for institutionalised patients, these patients are invited to void at regular intervals, but are only taken to the toilet if the patient wishes (Hu, Igou, Kaltreider, Yu, Rohner, Dennis, Craighead, Hadley and Ory, 1989; Engel, Burgio, McCormick, Hawkins, Scheve and Leahy, 1990; Schnelle, 1990). This method of bladder re-education uses praise and social reinforcement to encourage its success.

In reviewing the literature on the use of bladder re-education in the promotion of continence a limited number of studies were found which used bladder re-education alone and not in combination with drug therapy or psychotherapy. Early studies by Jarvis and Miller (1980) and Jarvis (1982) used bladder re-education alone, with the 1980 study involving a control group of 30 and a study group of 30 women aged between 21-79 which reported a 90% cure rate. Two years later Jarvis (1982) studied

33 women, aged between 31-63 which did not include a control group and reported a 61% cure.

More recently Fantl *et al.*, (1991) undertook a randomised controlled trial of 123 community dwelling women aged between 55-90 years who suffered from detrusor instability. Sixty women participating in the study underwent a programme of patient education and used a voiding schedule following their assessment, for a period of six weeks. Subjective and objective outcome measures were taken and the result showed a 57% reduction in incontinent episodes. In 1992 Colling, Ouslander, Hadley, Eisch and Campbell undertook a quasi-experimental design project of 218 nursing home residents aged 65 years and older and implemented an individualised toileting programme based on individual assessment. Both subjective and objective measures were used, and an 86% improvement was reported. More commonly, studies have been undertaken which involve bladder re-training and an additional therapy e.g. drug therapy or psychotherapy. Frewen (1978) used bladder training, detrusor inhibitory drugs and psychological counselling as his intervention in his study involving 40 female subjects. The main treatment in the study was considered to be the bladder training and an 82.5% cure rate was achieved. The trial was not controlled and due to the three interventions which act as confounding variables it is impossible to attribute the cure rate solely to bladder training. McDowell, Burgio, Dombrowski, Locher and Rodriguez (1992) used a combination of bladder training and pelvic floor exercises in 70 community dwelling elderly resulting in a reduction in reported 'accidents' of 82%. Burgio (1990) undertook a study where a bladder training programme taught by a nurse practitioner to geriatric outpatients resulted in an 80% reduction in 'accidents'.

A limited number of trials have directly compared drug therapy and bladder re-education. Wiseman and Malone-Lee (1991) used a randomised double blind parallel group study of 37 women with a mean age of 80.4 years. Nineteen women received bladder re-education and Terodiline and 18 received bladder re-education and a placebo. Results showed little difference between the study group and the control. However Terodiline was withdrawn from the market in 1992 following reports of

serious cardiac arrhythmias' in a number of users. Therefore the side effects of drugs weighed against bladder re-education which lacks complications would seem to leave bladder re-education as the treatment of choice.

Psychological treatment of individuals is considered an important aspect of bladder training (Frewen, 1978), and it has been suggested that urge incontinence may have a psychosomatic origin (Frewen, 1978). This accounts for the use of psychotherapy in addition to bladder training when attempting to achieve continence amongst study groups (Frewen, 1978; Macauley *et al.*, 1987). However, there remains little systematic research evidence to support the use of psychological treatment in bladder re-education.

Freeman and Baxby (1982) studied the effect of hypnotherapy on removing the symptoms and episodes of incontinence on a single group of 50 women. They reported 58% cure and 28% improvement in patients, showed objectively by cystometrogram. This study has not been replicated and therefore should be considered with some caution.

Roe, Williams and Palmer (1999) in a recently updated Cochrane review of bladder training for urinary urge incontinence conclude that there are few studies in this area which use small samples and are of varying quality, they suggest that bladder training may be helpful in the treatment of individuals suffering from urge incontinence. Bladder re-training depends heavily on the participation and co-operation of the patient (Burgio, 1990) and may take up to three months before patients show improvements (Pengelly and Booth, 1980; Jarvis, 1981). In addition to bladder re-training, psychotherapy and hypnotherapy have been investigated as a means of treatment. Nevertheless, however effective these treatments may be, they are all labour intensive and time consuming requiring not only motivation by the patient but also by the carer, and long term commitment to the programme is essential to ensure its success.

### 3.9.2 Pelvic floor muscle re-education

Pelvic floor muscles form a sling to support the pelvic and abdominal organs and are integral in maintaining urinary and faecal continence. These muscles provide elasticity and strength, but these factors may be lost with increasing age, childbirth, reduced activity and obesity. This can result in prolapse of the pelvic organs and a weakened urethral sphincter. The use of pelvic floor muscle exercise and electrical stimulation can improve the elasticity and strength of the pelvic floor muscles (Laycock, 1992a). Pelvic floor muscle re-education may be used for women with stress incontinence and men following prostatic surgery (Castleden, Duffin and Mitchell, 1984; Burgio, Robinson and Engel, 1986; Ferguson, McKey, Bishop, Kloen, Verheul and Dougherty, 1990).

In order to assess contraction of the pelvic floor muscles, and to evaluate the effects of pelvic floor muscle exercise, digital assessment is used (Brink, Sampselle, Wells, Diokno and Gillis, 1989; Laycock 1992a). Laycock (1992a; 1992b) has described assessment as follows, the index and middle finger are inserted into the vagina and the patient is asked to squeeze and lift for up to ten seconds, hold time is recorded which assesses muscle fatigue and the person is asked to repeat the contractions to determine the endurance and for an individualised exercise plan to be developed.

The muscle strength is assessed using the modified Oxford grading system:

0	-	nil
1	-	flicker
2	-	weak
3	-	moderate
4	-	good
5	-	strong

How often a person can repeat these contractions gives an indication of endurance and helps to plan an individualised exercise plan. A four second rest is given between each contraction (Laycock, 1992a; 1992b). Slow twitch muscle fibres are responsible for the endurance, hold times and number of repeated contractions, but fast twitch muscles are used for a maximum contraction or when speed is required. The number

of fast one second contractions should also be assessed as part of the digital assessment. A complete assessment would be:

3	/	5	/	4	/	6
moderate		held for five		repeated four		six fast contractions
contraction		seconds		times		

People can monitor their own progress by carrying out a digital self-assessment. Hormonal changes affect the pelvic floor muscles (Bhatia, Bergman and Karram, 1989) and some women find their incontinence gets worse before or during menstruation, therefore digital assessment should be performed at the same point in the menstrual cycle (Laycock, 1992a).

Assessment of the male pelvic floor is undertaken digitally with the index finger, the individual lying in the left lateral position with hips and knees flexed. He is asked to squeeze, lift hold and relax his pelvic floor muscles and an assessment is made.

Pelvic floor muscle re-education is prescribed for sufferers of genuine stress incontinence and has been since as long ago as 1940 when Kegel recommended the prophylactic treatment of women with poor levator function. In 1951, Kegel described the association of inadequate pelvic floor strength and tone with stress incontinence. Since that time many studies have been undertaken to assess the usefulness of pelvic muscle exercise in the treatment of stress incontinence. But, as Wells (1990) noted in her review of pelvic muscle exercise which included studies from Jones and Kegel (1952), there are many different study designs, samples, methods and measures which may contribute to differences in findings. The information obtained from the digital assessment provides the baseline information for the patients exercise programme, using the example described of 3/5/4/6, the exercise programme might be implemented as follows:

The values from the assessment form the basis of the exercise, which is repeated a minimum of eight times each day.

Five second contractions to be repeated four times with a four second rest between each contraction.



This group of four contractions to be repeated five times at each session with a one minute rest between each contraction.

Once per day do six fast contractions and the stop test.

Total number of contractions per day = 166

Individualised exercise programmes need to be implemented and can be altered as improvements occur. These exercises programmes can be taught to both men and women.

For the present review the literature was searched for recent studies of pelvic muscle exercise, eight studies were examined. Study design varied from a single group (Elia and Bergmann, 1993) to a randomised controlled trials (Lagro-Janssen, Debruyne, Smits and Van Weel, 1991b). Sample size ranged from 39 (Peattie, Plevnik and Stanton, 1988) to 1800 patients (Sleep and Grant, 1987). The mean age of subjects in the studies ranged from 26 years (Sleep and Grant, 1987) to 66 years (Wells, Brink, Diokno, Wolfe and Gillis, 1991). Six of the studies used pelvic muscle exercise alone (Sleep and Grant, 1987; Cammu, Van Nylen, Derde, Debruyne and Amy, 1991; Mouritsen, Frimodt-Moller and Moller, 1991; Lagro-Janssen *et al.*, 1991b; Elia and Bergman, 1993; Hahn, Milsom, Fall and Ekelund, 1993), whilst Wells *et al.*, (1991) divided their sample into two groups, one group undergoing the intervention of pelvic muscle exercise, the other the use of the drug Phenylpropanolamine hydrochloride. Peattie *et al.*, (1988) used vaginal cones in their teaching of pelvic muscle exercise, as introduced by Plevnik in 1985.

The method of training was described in each of the studies except by Hahn *et al.*, (1993), who listed programmes undertaken between 1983 and 1989, but did not describe each of them in detail. Training programmes were undertaken by physiotherapists in four studies (Cammu *et al.*, 1991; Mouritsen *et al.*, 1991; Elia *et al.*, 1993; Hahn *et al.*, 1993). Instruction in exercise programmes was undertaken by a general practitioner in the Lagro-Janssen *et al.*, (1991b) study, and by a midwife in Sleep and Grants' (1987) study. Wells *et al.*, (1991) programme of exercises were

taught by a nurse practitioner. One study did not indicate who undertook teaching of their exercise programmes (Peattie *et al.*, 1988).

Description of pelvic muscle exercise programmes differed quite substantially, Elia *et al.*, (1993) undertook a training programme twice weekly for one and a half hours for six weeks and instructed that exercises should be performed at home for 15 minutes four times a day, while Lagro-Jansen *et al.*, (1991b) undertook a single training session giving no indication of duration and instructed that 10 sessions of 10 contractions of pelvic muscles should be performed per day. However few studies comment on whether the exercise programmes were actually adhered to. Lagro-Janssen *et al.*, (1991b) suggest that the 15% of women in their study who failed to respond to pelvic muscle exercise resulted from low motivation on the part of the patient rather than treatment failure. In addition they point out that 'quite a few' patients found mild incontinence acceptable which should be taken into account when assessing the success or failure of a treatment.

Subjective and objective measures were used in all 8 studies to assess the outcome of the intervention. Subjective measures included interview and the completion of a urine diary. Objective measures included pad weighing tests for volumes of urine lost and simple urodynamic evaluation to measure urethral competency. Few of the papers reported cure rate alone but gave an overall figure for cure or improvement which ranged from 47% (Mouritsen *et al.*, 1991) to 77% (Wells *et al.*, 1991). Cure rate, where reported, was as low as 25% (Cammu *et al.*, 1991). There are obvious difficulties however in comparing results from studies which have used such diverse samples, methods and outcome measures.

Only three of the studies looked at the long term effects of pelvic muscle exercise programmes (Mouritsen *et al.*, 1991; Cammu *et al.*, 1991; Hahn *et al.*, 1993). Hahn *et al.*, (1993) suggest in their study that continued guidance from a physiotherapist in pelvic muscle exercise programmes would improve the long term efficacy of pelvic muscle exercise training. However a postal survey undertaken by Mantle and Versi in 1991, involving physiotherapists from 192 district health authorities, revealed that

whilst physiotherapists were treating considerable numbers of patients for stress incontinence, their modes of treatment varied considerably and they reported a need for rationalisation of the service offered by physiotherapists in the area of continence promotion.

Wells (1990) suggested that pelvic muscle exercises are a 'safe and theoretically sound treatment with no known risk, and no study has reported complications from it'. However since publication of her review Bump, Hurt, Fantl and Wyman (1991) have concluded from their study of simple verbal instruction in achieving an adequate pelvic muscle contraction that women may adopt a technique which could potentially promote the defect responsible for their incontinence. Not only does this contradict Wells' statement but it also backs Mantle and Versis' (1991) conclusion that the service and education offered by physiotherapists in the promotion of continence would benefit from further research.

In conclusion then, it would seem that within the area of the promotion of continence there is most certainly a place for pelvic muscle re-education programmes but further research needs to be undertaken in this area to determine what the content and training programmes should be, who will benefit from the training, how patients can be motivated to undertake the training and continue it to achieve maximum benefits and determine the long term effects of this behavioural approach to incontinence.

### **3.9.3 Vaginal cones**

Vaginal cones, introduced by Plevnik in 1985 are weighted cones which can be used to exercise the pelvic floor muscles. Once a cone is inserted into the vagina the feeling of the cone falling out causes a woman to contract her pelvic floor muscles to keep the cone in place. According to Peattie *et al.*, (1988) the cones are generally well accepted by women and can supplement general pelvic floor exercises (Laycock 1992a). Plevnik (1985) in his small study of ten women found that 80% in the trial group increased the rested strength of the pelvic floor muscles and 100% increased the active strength of the pelvic floor muscles using vaginal cones. Stanton, Plevnik and Peattie (1986) in their study of 15 women with stress incontinence reported 67%

improvement when using vaginal cones in the management of stress incontinence. Peattie *et al.*, (1988) undertook a trial comparing pelvic floor exercises with the use of vaginal cones, 37 women were included in the study, subjective improvement was reported by 80% and objective improvement in 60% of those who used vaginal cones. Although the reported success from these trials was impressive, the number of subjects included were very small, and results should therefore be treated with caution. Large well designed studies need to be undertaken to determine the value of vaginal cones in the promotion of continence.

### **3.9.4 Electrical stimulation**

Electrical stimulation has been used by physiotherapists to exercise and stimulate muscles. Until recently electrical stimulation was undertaken by the physiotherapist with the patient attending clinics two to three times a week. More recently portable electrical stimulation packs have been made available (Blowman, Pickles and Emery, 1991). Electrical stimulation has been shown to improve continence by 50% when used in conjunction with pelvic floor muscle exercises (Plevnik, Jarez and Vrtacnik, 1986; Blowman *et al.*, 1991). Fall, Ahlstrom, Carlsson, Ek, Erlandson, Frankenberg and Mattiasson (1986) in their study of 40 women undergoing electrical stimulation found 25 had improved and eight had 'excellent results' following several months of vaginal stimulation. The type and frequency of current for electrical stimulation remains to be properly established. Laycock (1992a) suggests that due to the high cost of therapy time, the provision of electrical stimulation units to individual patients may be more economical, however problems with patient motivation may arise with the loss of third party involvement providing encouragement and reinforcement. The technique can be used in patients who are neurologically impaired or intact (AHCPR, 1992). Studies involving the use of electrical stimulation have shown improvements in incontinence, however studies are difficult to compare because specific details regarding use of electrical stimulation differ in each study in relation to voltage and duration of treatment (Fossberg, Sorensen, Ruutu, Bakke, Stein, Henriksson and Kinn, 1990; Hahn *et al.*, 1993; Esa, Kiwamoto, Sugiyama, Park, Kaneko and Kurita, 1991; Meyer, Dhenin, Schmidt and DeGrandi, 1992; Caputo, Benson and McClellan,

1993; Schiotz, 1994). Before this practice becomes more widespread, research on its short and long term effects need to be addressed.

### **3.9.5 Biofeedback**

This is a technique where an individual receives sensory information (usually visually) relating to a body function which would otherwise be difficult to appreciate (Laycock, 1992a). Biofeedback usually relies on electronic or mechanical instruments to provide feedback to the individual about their physiological activity. Biofeedback used in pelvic floor muscle re-education reinforces muscle contractability and co-ordination (Burgio *et al.*, 1986). Biofeedback has been used with good results in the treatment of detrusor instability (Burgio *et al.*, 1986, O'Donnell and Doyle, 1991). Cardozo, Abrams, Stanton and Feneley (1978) have achieved success with this method and found improvement in 81% of cases. Burgio *et al.*, (1986) reduced incontinent episodes by 85% in patients with detrusor instability using biofeedback techniques. An advantage of the use of biofeedback is its low risk and absence of documented side effects. However, its main limitation is that it relies on active participation of a co-operative patient and therefore could not be used for patients with cognitive impairment (Burgio, Whitehead and Engel, 1985). Laycock (1992b), described the use of biofeedback and pelvic floor exercises whilst Burns, Pranikoff, Nochajski, Hadley, Levy and Ory (1993) compared biofeedback and pelvic floor exercises, they found no significant differences between the two treatments. Further controlled studies are indicated before biofeedback is used more widely.

### **3.9.6 Mobility**

The tone of the pelvic floor muscle is maintained by general exercise, e.g. walking cycling etc (Gordon and Logue, 1985). Such general exercise may be enough to maintain muscle tone so that incontinence does not occur. It is therefore important, especially in the elderly to ensure maximum activity and mobility by standing and walking (Laycock, 1992a). Laycock (1992a) points out the importance of making patients and carers aware of the importance of maintaining mobility.

### **3.9.7 Drugs used in the promotion of continence**

Many drugs are available for the treatment of urinary incontinence and can be divided into two groups: drugs used in the treatment of detrusor instability and drugs used in the treatment of stress incontinence. In this review the groups will be discussed separately in two sections.

#### *Drugs used in the treatment of detrusor instability*

Studies of drugs used in the treatment of detrusor instability have many problems (Wall, 1990). Conclusions are often based on subjective results and few studies use the ideal design of a prospective, randomised, double blind cross-over study where the drug is compared with a placebo. Drug trials are frequently funded by drug companies which also poses the problem of possible bias.

Drugs used in detrusor instability can be divided into four groups: anti-cholinergics, including propanthelene, anti-spasmodics, including oxybutinin, calcium channel blockers e.g. nifedipine and tricyclic anti-depressants, all of which have demonstrable side effects (Andersson, 1988).

Drugs are often used in combination with bladder re-education programmes for urge incontinence. They have been used in this way in a number of studies. Elder and Stephenson (1980) included anti-cholinergic drugs and sedatives as supportive therapy when evaluating bladder re-education programmes. An uncontrolled study of 21 female patients was undertaken by Elder and Stephenson (1980). They claim that 52% of patients were cured of urge incontinence and 33% were much improved. However the sample was very small and it is difficult to know whether success should be attributed to the bladder re-education programme or drug therapy. The lack of a control group further confounds the ability to attribute success to a particular intervention. Mahady and Begg (1981) in their study used drug therapy alone in the early weeks of treatment for urge incontinence followed by a long term programme of bladder re-education. Drug therapy was discontinued when progress began. There was a 90% cure rate reported, but again this could not be attributed to either the drug therapy or the bladder re-education programmes alone. Trials directly comparing bladder re-education and drug therapy for detrusor instability are uncommon. Jarvis

(1981) in a controlled study of 50 female patients compared bladder training of 25 in-patients with drug therapy of 25 out-patients. The drug therapy included Flavoxate Hydrochloride and Imipramine for four weeks. Fifty four percent of patients were continent after drug therapy and 84% after bladder training. A number of patients taking medication suffered from side effects. The study concluded that bladder training was the treatment of choice, due to its lack of side effects and better results. Malone-Lee (1994) undertook a randomised double blind trial of oxybutinin (a smooth muscle relaxant with anticholinergic properties) with bladder training and a placebo and bladder training in 60 elderly patients. The study concluded oxybutinin provided a significantly greater reduction in incontinent episodes.

It has been found that placebo drugs (Wiseman and Malone-Lee, 1991), are as effective as trial drugs when given to women with detrusor instability, therefore individual responses to the effectiveness of drugs may need to be treated with caution. Considering the wide range of side effects ranging from dry mouth to cardiac arrhythmias (Sourander, 1990), often caused by drugs used in the management of detrusor instability, it would seem that drugs for the promotion of continence should be prescribed with these factors borne in mind.

#### *Drugs used in the treatment of stress incontinence*

Oestrogens and alpha adrenergic agents are currently used in the treatment of stress incontinence. Oestrogen used in post- menopausal women may restore the urethral mucosa and increase vascularity and tone, aiding responsiveness of the urethral muscle to alpha adrenergic agents. Cardoza and Kelleher (1994), note that studies of oestrogen therapy have varied with type of oestrogen, route of administration and dose and duration of therapy. Whilst a number of studies have shown that oestrogen has a positive effect in reducing stress incontinence in post- menopausal women, Fantl *et al.*, (1994) in a meta analysis of the effectiveness of oestrogen therapy found significant improvements in incontinence subjectively although such results were not found objectively. Concern about the long term effect of systematic high dose oestrogen has been reported (Sand and Brubaker, 1990). Moreover, some of these adverse effects can be avoided by the use of vaginal oestrogen cream preparations

rather than systemic oestrogen. It has been suggested that subjective benefits of oestrogen for urinary incontinence may be due to the effect of oestrogen on the whole body and quality of life.

The use of alpha adrenergic therapy has been found to improve the conditions of many patients suffering from stress incontinence, but its side effects include hypertension and a heightened risk of cerebrovascular accident (Sand and Brubaker, 1990).

Gilja, Radej, Kovacic and Parazajderj (1984) used imipramine in their study of women with stress incontinence, both subjective and objective improvements were made, however, long term controlled trials have not been undertaken. Andersson (1988) suggests that oestrogen therapy may be effective in mild forms of stress incontinence. Beisland, Fossberg and Sander (1981) in their study of 13 patients with stress incontinence gave oestriol 80mg intra-muscularly every four weeks with phenylpropanolamine 50mg twice daily, 12 patients became continent or improved with therapy. However, this study was very small and not controlled, more evidence of the efficacy of such treatments is required.

In conclusion then, the use of drugs in the treatment of incontinence is not totally satisfactory. Drugs are generally used in combination with either pelvic muscle re-education or bladder re-education but side effects, from these drugs, especially among the elderly are not uncommon (Jarvis, 1981; Walters *et al.*, 1992). The beneficial effects of drugs used in the promotion of continence remain questionable due to the inadequate research designs used that do not remove confounding variables.

### **3.10 Education**

#### **3.10.1 Teaching patients and carers about incontinence**

Patient education has been recognised as an important aspect of the nurses' role (Close, 1988). Within the area of continence promotion and the management of incontinence there is a great deal of education/teaching to be undertaken by the nurse. This section looks at the types of teaching methods available for use by nurses, the



importance of the nurse's role as educator and the implications of teaching for patients suffering from incontinence.

Theories of learning have been categorised into three areas: cognitive learning, affective learning and psychomotor skills (Krathwohl, Bloom and Masia, 1965; Coutts and Hardy, 1985). Cognitive learning is where knowledge is acquired exclusively through mental operations. Teaching methods which bring about cognitive learning include discussion and written information in the form of booklets, videos, lectures. Such methods can be taught to groups or individuals. There are obvious problems with these forms of teaching. Booklets assume people can read and sometimes printed material may be misinterpreted (Vissner, 1980). Affective learning incorporates values, attitudes and beliefs which often require change. Such learning can be achieved through listening and discussion, encouragement and counselling. A trusting, caring and secure relationship can be formed allowing people to cope and adapt to their situation. Psychomotor skills refer to the learning or acquisition of a motor skill such as learning to empty a urine drainage bag. These skills are learned through frequent practice and reinforcement. Verbal description, diagrams, video, demonstration and practice and evaluation may be used to teach psychomotor skills (Roe, 1992).

When any or all of these teaching methods are used a number of key factors need to be taken into account:

#### *Motivation*

Motivation is a key factor which influences learning (Coutts and Hardy, 1985). It has been suggested that there are two types of motivation: *intrinsic motivation*, where behaviour continues without reinforcement and *extrinsic motivation* where encouragement, reward and reinforcement are given.

#### *Memory*

Memory will affect an individual's ability to learn, because it depends upon the ability to store and retrieve information. Memory may be enhanced by reinforcement and repetition (Coutts and Hardy, 1985)

### *Age*

Age related changes should be borne in mind when selecting methods of teaching. Poor eyesight and hearing, common in the elderly may affect an individual's ability to see and hear information (Culbert and Kos, 1971). Therefore written material should be in clear, bold typeface and teachers should speak slowly and clearly.

### *Psychological factors*

Psychological factors may affect an individual's ability to learn. Culbert and Kos (1971) state that patients' motivation is poor and therefore the ability to learn limited during a crisis of illness. However, they also state that mild anxiety and an awareness of the need to learn can be highly motivating.

### *Environment*

The environment in which learning takes place can be very important. White *et al.*, (1980) found that the majority of patients' learning took place following discharge from hospital. Recent studies have reported a lack of information given to patients prior to discharge (Kelly, 1987; Roe and Brocklehurst, 1987). Ideally, the teaching of patients should begin prior to discharge and continue into the community supported by thorough written information (Roe, 1989).

### *Compliance*

Teaching has been found to positively affect patients' compliance (Youssef, 1983). However there have been reports from studies where non-compliance with bladder training regimens have been reported even after teaching, because the extrinsic motivation was removed and the intrinsic motivation was not sufficient (Frewen, 1980; Pengelly and Booth, 1980).

## **3.10.2 Role of the nurse**

Patient education is increasingly being seen as an important function of the nurse (Close, 1988; Wilson-Barnett, 1988). Close (1988) questions whether nurses are adequately prepared to teach patients. She suggests that Registered Nurses should be responsible for patient education and these skills should be taught during basic training. Nursing literature clearly supports the fact that nurses are central to patient education (Wilson-Barnett, 1988; Redman, 1984). Nurses are undoubtedly in a good position to initiate training in strategies for the promotion of continence (Rooney,

1989). However Luker and Caress (1989) state that patient education should not be undertaken by all Registered Nurses but should be the responsibility of specialist nurses who develop and undertake education programmes for patients. They also refer to a self-care approach for patient education whereby the responsibility for patients learning moves from the nurse to the patient, they discuss computer assisted learning and its potential within patient education overcoming barriers even in the elderly.

### **3.11 Summary**

This review of the literature on the promotion of continence has established the effectiveness of three major treatment modes: bladder re-education, pelvic muscle re-education and the use of drugs whilst pointing out their limitations. When deciding what mode of continence promotion to use it is essential that a full continence assessment is made, not only to establish individual needs for treatment, but also a persons suitability. Elderly, infirm individuals with poor mobility and chest conditions may present an anaesthetic risk. Other individuals may present contraindications for drug use, and motivation should be established when implementing programmes such as pelvic muscle exercises and bladder re-education. In order to gain the best outcome for sufferers their needs must be fully established and their involvement in decision making included.

In summary, this review has critiqued the current research literature on urinary incontinence and has covered the prevalence, causes and types, assessment, promotion and management of continence, as well as a discussion of the methods of teaching used to teach patients and carers about incontinence. This review demonstrates the wide amount of research literature available to clinicians on the subject of incontinence. Incontinence constitutes an everyday problem for nurses and in order to offer the highest standard of care for their patients the nurse needs to be familiar with up to date research evidence on which to base their clinical practice. The following chapters will describe the process by which research information on the subject of incontinence was disseminated to nurses caring for elderly patients and discusses some of the issues surrounding the implementation of research evidence in practice.

## **Chapter Four: Research in practice :an exploration of barriers and facilitators**

## 4.1 Introduction

The issues surrounding the dissemination and utilisation of research evidence by nurses and the literature on incontinence have been presented in Chapters Two and Three. It is evident that a number of barriers exist which affect the uptake and use of research evidence in nursing practice (Funk *et al.*, 1991b). The current chapter presents a study involving the use of a postal questionnaire to determine practising nurse's views on barriers to and facilitators of the use of research in practice. The chapter will begin with a short introduction before moving on to present the methodology for the study including research objectives, design, population and sample, response rate and methods of data collection. A short section will describe the use of critical incidents in the study before describing the pilot study, outlining ethical considerations and issues of reliability and validity. The results will then be presented and discussed. This discussion will link to the overall discussion in Chapter Eight. A short summary section will conclude the chapter.

The BARRIERS scale (Funk *et al.*, 1991a) outlined in Chapter Two section 2.8 was adopted and used with permission from Professor Funk. This scale was originally developed from the CURN Project Research Utilisation Questionnaire (Horsley *et al.*, 1978) and from informal data from nurses. Items with face and content validity were pilot tested and the resulting 29 item BARRIERS scale was then used by Funk *et al.*, (1991a) on a sample of 4,000 American nurses. This scale was considered an appropriate tool to adopt in this study in order to identify barriers and facilitators to the use of research in practice in the U.K. It covered a wide range of potential barriers and facilitators with which nurses could identify and offered the opportunity to identify groups of barriers associated with specific aspects of research, the nurse, the setting and research accessibility.

The suitability of the BARRIERS scale for U.K. use is reported by Dunn, Crichton, Williams, Roe and Seers (1998). The BARRIERS scale was selected for use in this study because the development of the scale was well documented (Funk *et al.*, 1991a) and based on evidence of its reliability and validity demonstrated good psychometric properties (details of which will be broadly outlined below). The BARRIERS scale is

underpinned by Rogers' 'Theory of Diffusion and Innovation' (Rogers, 1995). The scale had been developed based on a review of the literature and on data gathered from clinical nurses. Content analysis was undertaken by experts in psychometric testing, nursing research and clinical practice. Face and content validity was established by an expert panel and factor analysis was performed on the data. This analysis supported the construct validity of the tool. Test-retest reliability was reported by Funk *et al.*, (1991a), this was tested on 17 respondents and Pearson's correlations between the two sets of responses ranged from 0.68 to 0.83. In addition, the selection of the BARRIERS scale for use in this study was considered appropriate because a number of other research groups were considering using the scale, this would mean that in the future comparisons could be made between studies both nationally and internationally.

## 4.2 Methods

### 4.2.1 Objectives

There were two main research objectives of this postal questionnaire study:

1. To identify the barriers to the use of research by nurses working in elderly care settings.
2. To identify the facilitators of the use of research by elderly care nurses.

The aims of the research were informed by the literature review. This part of the study was designed to provide descriptive and statistical data. The following research hypotheses were proposed:

- a) Nurses working in elderly care will identify more barriers to the dissemination and utilisation of research related to *setting* than any other factor.
- b) Nurses working in elderly care will identify more barriers to the dissemination and utilisation of research related to *the nurse* than any other factor.
- c) Nurses working in elderly care will identify more barriers to the dissemination and utilisation of research related to *research* itself than any other factor.

- d) Nurses working in elderly care will identify more barriers to the dissemination and utilisation of research related to *presentation of research* than any other factor.

The role of demographic (age, sex, grade) characteristics on nurses views of barriers and facilitators were also investigated.

#### **4.2.2 Study Design**

The purpose of the research was to provide a quantitative overview of nurses' perceptions of the barriers and facilitators of using research in practice. The study design adopted was a postal survey. A postal survey was used in order to gain a large amount of data in an efficient and effective manner (Getliffe, 1998).

#### **4.2.3 Population and Sample**

The sample was drawn from nurses working in elderly care settings in one Health Authority (HA1) located in the South of England. The HA covered a wide geographical area, five sites provided elderly care within the HA, three of the sites had between 20-28 beds and were located in moderate sized towns in semi-rural communities, although these communities were within commuting distance of London. The remaining two sites comprised small community hospitals with less than 10 beds in more rural settings. The sample of elderly care nurses spread over five sites within a single HA were selected for study for three main reasons: firstly, there is a large amount of research evidence available for implementation in elderly care settings, secondly elderly care settings are often perceived as those areas less prepared to implement change and thirdly, in such a geographically spread setting, it was likely that a wide range of barriers to research use would be experienced. Ideally a sample would have been drawn from a variety of clinical settings, however, for practical and financial reasons this was not feasible. A total population of 103 qualified nurses both Registered General Nurses and Enrolled Nurses from care of the elderly units in one health authority were invited to take part in the survey, all nurses were invited to participate whether they worked full or part-time. Three nurses had left the health authority since the original list was sent, therefore a total population of 100 nurses were available to participate. The criteria for selection of the sample were that the

nurses were qualified and working in elderly care. These broad criteria were chosen to maximise the number of nurses able to participate, and no boundaries were set (e.g. years since qualification or qualification itself). The intention was to include all qualified nurses because the research questions being posed were relevant to all. Questionnaires were sent out on three occasions in order to maximise the response rate, a three week interval was given between each mailing, and on each occasion a full questionnaire was sent along with the reminder. Post card reminders are often sent in order to keep costs low (Oppenheim, 1992); however, within this study the hospital internal post system was being used and this restriction on postal cost did not apply. A pre-addressed envelope was sent with the questionnaire and if nurses did not wish to take part in the survey they were requested to return the uncompleted questionnaire. When an uncompleted questionnaire was received no further reminders were sent as the individual had made a conscious decision not to take part in the study. This saved time for both the researcher and those nurses who did not wish to take part.

**Table 4.1. Response rate to the barriers questionnaire**

Potential population		First mailing	Second mailing	Third mailing	Total
Complete		26	18	11	55 (55%)
Return/not completed		1	14	4	19 (19%)
Total	100	27	32	15	74 (74%)

#### **4.2.4 Response Rate**

Overall from all three postings 74% (n=74) questionnaires were returned. However only 55% (n=55) were completed, giving a 55% response rate. The greatest number of completed questionnaires were received from the first mailing (47%, n=26), 33% (n=18) were received from the second mailing and 20% (n=11) from the third.

#### **4.2.5 Methods of data collection**

##### *The BARRIERS tool*

The data collection instrument used consisted of a six page questionnaire which included the 29-item BARRIERS to research utilisation scale. A copy of the complete



questionnaire is included in Appendix A, along with the covering letter inviting nurses to take part in the study. A description of the questionnaire is given in section 4.1 paragraph 2.

The scale asks respondents to rate the extent to which they consider each of 29 items as a barrier to using research to change practice. A five point scale was used and respondents were asked to circle the response which applied to them:

- 1 indicated that the item was a barrier *to no extent*
- 2 indicated that the item was a barrier *to a little extent*
- 3 indicated that the item was a barrier *to a moderate extent*
- 4 indicated that the item was a barrier *to a great extent*
- 5 indicated *no opinion* on the item

The resulting 29 items were randomly ordered to comprise the BARRIERS scale. The tool has four subscales or factors relating to:

- 1 characteristics of the *nurse* e.g. research skills
- 2 characteristics of the *setting* e.g. barriers in the work setting
- 3 characteristics of the *research* e.g. methodological soundness
- 4 characteristics of the *presentation* of the research e.g. accessibility.

Funk *et al.*, (1991a) found that all items in the scale loaded to one of the four factors. The scale was found to have diagnostic and evaluative potential by identifying barriers to utilisation and thereby informing research utilisation strategies.

A series of questions relating to biographical and professional details were also asked. These questions related to age, grade, job title, qualification and type of employment (full or part-time).

### *Critical Incidents*

In order to supplement information gained using the BARRIERS scale, the critical incident technique was adopted as a means of data collection. This method of data collection allows individuals to describe incidents when a specific activity was achieved or was not achieved (Cormack, 1991). The critical incident technique (Flanigan, 1954) was originally used with patients, although more recently Norman, Redfern, Tomalin and Oliver (1992) used the critical incident technique to enable

both patients and nurses to identify levels of quality in nursing care. It allows respondents to describe actual events to illustrate how activities are undertaken in the real world, taking into account constraints and limitations in everyday life.

Cormack (1991) describes a six phase approach to the critical incident technique which includes deciding who should provide critical incidents and the number of respondents required, the design of a data collection form as well as decisions on where and how to collect information before undertaking analysis. Each of these steps were followed, but data were collected as part of a postal questionnaire, this led to a low response. Critical incident information is usually collected in semi-structured interviews (Polit and Hungler 1991). Posing critical incident questions within a postal questionnaire gave respondents the opportunity to explore specific incidents in-depth but no prompts were given; for this reason the critical incidents were later followed up in semi-structured taped interviews (see section 5.3.14). This allowed the use of probes and prompts by the interviewer to provide descriptions of factual incidents. The results from these critical incidents are described in section 4.3.4. It is likely that the nurses responding to the questionnaire had not been asked to think about their practice in this way before and may have required more prompting and information on how to complete this section which was not possible to provide within a postal questionnaire.

The critical incident questions were phrased as follows:

*We are interested to know whether nurses are able to use research findings in their everyday practice. The following questions allow you to give examples of times when you were able to use research to guide your practice and times when you were not.*

- 1 Can you give an example where you felt you were **able** to use research in practice?*
- 2 Can you give an example where you felt you were **unable** to use research in practice?*

#### **4.2.6 Pilot Study**

A pilot study was undertaken prior to the main study in order to test the acceptability of the questionnaire to U.K. nurses. The pilot study included 50 elderly care nurses at

five sites in a single county in South England, and provided data for validation of the BARRIERS scale in the U.K. (see section 4.2.8). Previously, the questionnaire had only been used in North America and not tested on a U.K. population of nurses; a paper has subsequently been published by Dunn *et al.*, (1998) on this subject. They concluded that the BARRIERS scale offered a useful tool to build on strengths and address weaknesses in the dissemination and implementation of research in clinical practice. The postal questionnaire was sent to a group of nurses who were involved in another study. A covering letter was sent with the questionnaire, requesting any comments on the content and format of the questionnaire. No major problems were detected with the wording or content of the survey and therefore it was adopted for use in the main study.

#### **4.2.7 Ethical Considerations**

Ethical approval for this project was granted by the local ethical committee in May 1994. In addition, meetings were set up with senior nurses at each unit in order to gain approval for the work, and where appropriate meetings with ward staff were arranged. Nurses gave their individual consent by completing the questionnaire. The identity of the nurses in the study was not disclosed. Participants' names were coded. All data were stored in locked cabinets and identification sheets were only available to the researcher.

#### **4.2.8 Reliability and Validity**

*'Reliability may be defined as the degree of consistency or dependability with which an instrument measures the attribute it is designed to measure'* (Polit and Hungler, 1991, p653)

*'Validity may be defined as the degree to which an instrument measures what it is intended to measure'* (Polit and Hungler, 1991, p.657)

The pilot study suggested that the reliability and validity of the tool reported by Funk *et al.*, (1991a) on a U.S. sample, could be considered to hold true with a U.K sample. The scale measured what it was intended to measure, that is, nurses' views about what they believed posed barriers to the use of research in clinical practice. In addition, no

problems were found with the language and style of the tool, and overall it was acceptable to a U.K. sample. The BARRIERS tool provided consistent measurement of barriers and facilitators to research use over time and was therefore considered a valid measure. The reliability and validity of the tool had been demonstrated on the U.S. sample, however the pilot study provided the opportunity for feedback to be obtained which confirmed that the tool was acceptable for U.K. use. Dunn *et al.*, (1998) in their paper exploring the feasibility of using the BARRIERS scale amongst U.K. nurses tested the reliability of the tool for U.K. use. Dunn *et al.*, (1998) calculated Cronbach alpha co-efficients for all items together in the tool and for each factor identified by Funk *et al.*, (1991a) in earlier work. Cronbach alpha co-efficients are a widely used reliability index that estimates the internal consistency or homogeneity of a measure composed of several subparts. Dunn *et al.*, (1998) reported lower alpha co-efficients than Funk *et al.*, (1991a) especially for the factor presentation, a lower alpha co-efficient for presentation would indicate that the BARRIERS tool may be a less reliable tool for this factor, but Dunn *et al.*, (1998) suggest that the sample, which was small and convenient may have been unsuitable to develop factors in the U.K. data. From their data (which included data derived from this study) Cronbach alpha co-efficients were calculated for all items identified in the questionnaire. They reported the following results (see Table 4.2).

**Table 4.2: Cronbach alpha coefficients for all items together and for each factor as identified by Funk with data obtained from UK nurses. Reproduced with kind permission from Dunn *et al.*, 1998.**

Factor	Cronbach alpha coefficient	No. of responses used
1. Nurse	0.78	270
2. Setting	0.77	259
3. Research	0.67	174
4. Presentation	0.48	266
All 29 items (total)	0.85	150

Source: Dunn *et al.*, (1998)

### 4.3 Results

The aim of the postal questionnaire was to broadly identify barriers and facilitators to the use of research on continence care amongst nurses working in elderly care units. The statistical analyses undertaken on this data were primarily descriptive, and calculation of means was undertaken in order to classify responses as high importance, moderate importance or low importance.

Nurses were recruited from five sites involved in care of the elderly in one health authority. The response rate across sites varied from 68% (n=19) to 44% (n=12). see Table 4.3.

**Table 4.3 Response rate to the BARRIERS questionnaire according to location**

Location	Potential population	Overall response (%)
Site 1	28	19 (68%)
Site 2	8	4 (50%)
Site 3	9	6 (67%)
Site 4	28	14 (50%)
Site 5	27	12 (44%)
Total	100	55 (55%)

The highest response rate (68%, n=19) was from site one which had a potential population of 28 nurses, and the lowest response rate, (44%, n=12) was achieved at site five where the potential population was 27 nurses.

#### 4.3.1 Biographical and professional details

The mean age of respondents was 43 years; the youngest respondent was 22 years and the oldest 49 years. The mean year of qualification was 1974, the earliest reported year of qualification was 1947 and the most recent was 1994. Fifty two (94%) respondents were female, one (2%) was male (2 missing cases, 4%).

**Table 4.4 Respondents reported job title**

<b>Job title</b>	<b>Number</b>	<b>Percentage (%)</b>
Sister	8	14.5%
Primary nurse	4	7%
Associate nurse	14	25.5%
Team nurse	12	22%
Bank nurse	3	6%
Other	12	22%
Total	53 +2 missing cases	97% +2 missing cases

Most respondents reported their job title as being an associate nurse (14,26%), 12 (22%) respondents reported their job title as being a team nurse. The term primary nurse refers to a named nurse who is accountable for decisions and is responsible for actions relating to the planning and provision of direct care for a named group of patients on a continuous basis. The term associate nurse refers to a nurse who performs care in accordance with a set plan formulated by a primary nurse (Ersser and Tutton, 1991), whilst team nurse is a term which is less explicit and refers to nurses working within a team who share group responsibility for patients. A number of respondents 12 (22%) reported their job title as "other", of whom four respondents stated their job title to be staff nurse or senior staff nurse, four as senior sister or hospital manager, one as assistant ward co-ordinator, one as deputy ward sister and one as unit duty (see Table 4.4).

### *Grade*

The most commonly reported grades were D (20, 36%) and E (18, 33%) grade. The majority of qualified staff are employed at grades D and E, with usually only one nurse on each ward holding an F and G grade post.

**Table 4.5 Respondents' reported grade**

Grade	Number	Percentage (%)
G	7	13%
F	4	7%
E	18	33%
D	20	36%
Other	4	8%
Total	53+2 missing case	97%+2 missing case

Four respondents reported their grade as “other”, one reported her grade as C grade, one H grade and two senior nurse manager grade, “other” indicates any grade outside the D to G grade bands (see Table 4.5).

#### *Qualifications*

Forty four respondents (80%) held the RGN/SRN qualification, nine (17%) were enrolled nurses (ENs). Twenty five (48%) had at least one English National Board (ENB) qualification. No respondent in the sample held a university degree. Twelve respondents (23%) held "other" qualifications; where specified these included midwifery qualifications district nursing qualifications and in one case an ophthalmic nursing diploma.

Respondents were asked if they were currently registered on a formal course, and 16 (29%) reported that they were. The courses recorded included three nurses undertaking a part-time degree, two taking ENB courses and two taking management courses.

#### *Employment*

Nineteen (38%) respondents reported that they worked full-time, 24 (46%) respondents worked more than 20 hours per week part-time and 11 (20%) respondents worked less than 20 hours per week part-time. The majority (34, 62%) worked permanent day duty, 17 (31%) worked permanent night duty and only one (2%) worked internal rotation (3 missing cases).

### 4.3.2 Barriers Results

The following results describe the most frequently cited barriers to research use. Seventeen (49%) items on the BARRIERS scale were rated as posing great or moderate barriers to the use of research in practice by more than half of those responding to the survey. This constituted over half of the items. The greatest barrier reported by nurses was that research was 'overwhelming'. (see table 4.6). Amongst the top ten barriers, six related to barriers in the work setting and included: other staff not supportive of change (36, 64%), insufficient time to implement new ideas (34, 64%), results not generalizable to their own setting (34, 62%), facilities inadequate for implementation (34, 62%), lack of authority to change patient care procedures (33, 60%) and insufficient time to read research (31, 56%).

The ten items which were least likely to pose great or moderate barriers to research utilisation were;

1. isolation from knowledgeable colleagues with whom to discuss research (26, 47%)
2. lack of administrative support allowing implementation (24, 44%)
3. literature reported conflicting results (25, 44%)
4. research is not relevant to nurses practice (24, 44%)
5. research had methodological inadequacies (22, 40%)
6. research reports are not published fast enough (21, 38%)
7. nurses saw little benefit to themselves by implementing research (21, 38%)
8. nurses felt that conclusions drawn from research were not justified (19, 34%)
9. the nurse does not see the value of research (16, 29%)
10. there is no documented need to change practice (16, 29%)



**Table 4.6 Reported barriers to research utilisation**

Number (%) of nurses who perceive each barrier great or moderate.

Order	Type of barrier	Item	n (%) rating item as great or moderate barrier
1	Research	Research is overwhelming	37 (67%)
2	Setting	Other staff are not supportive of implementation	36 (65%)
3	Presentation	Statistical analyses are not understandable	36 (65%)
4	Setting	There is insufficient time on the job to implement new ideas	35 (64%)
5	Setting	The nurse feels results are not generalizable to own setting	34 (62%)
6	Setting	The facilities are inadequate for implementation	34 (62%)
7	Presentation	The relevant literature is not compiled in one place	33 (60%)
8	Setting	The nurse does not feel she/he has enough authority to change patient care procedures	33 (60%)
9	Nurse	Nurse does not feel capable of evaluating the quality of research	31 (56%)
10	Setting	The nurse does not have time to read research	31 (56%)
11	Nurse	The nurse is unaware of the research	31 (56%)
12	Setting	Physicians will not cooperate with implementation	31 (56%)
13	Research	The nurse is uncertain whether to believe the results of the research	30 (54%)
14	Presentation	Implications for practice are not made clear	30 (54%)
15	Presentation	The research is not recorded clearly and readably	30 (54%)
16	Presentation	Research reports are not readily available	28 (51%)
17	Nurse	The nurse feels the benefits of changing practice will be minimal	28 (51%)
18	Research	The research has not been replicated	27 (49%)
19	Nurse	The nurse is unwilling to change, try new ideas	26 (47%)
20	Nurse	The nurse is isolated from knowledgeable colleagues with whom to discuss research	26 (47%)
21	Setting	Administration will not allow implementation	25 (45%)
22	Research	The literature reports conflicting results	25 (45%)
23	Presentation	The research is not relevant to the nurses practice	24 (44%)
24	Research	The research has methodological inadequacies	22 (40%)
25	Research	Research reports/articles are not published fast enough	21 (38%)
26	Nurse	The nurse sees little benefit for self	21 (38%)
27	Research	The conclusions drawn from research are not justified	19 (34%)
28	Nurse	The nurse does not see the value of research	16 (29%)
29	Nurse	There is no documented need to change practice	16 (29%)

Having completed the scale nurses were asked if there were any other things that posed barriers to the use of research in practice. Nine of the 55 (16%) nurses reported additional barriers to research utilisation, which included:

*culture of the organisation*

*language*

*old school theory 'always done this way'*

*knowledge and understanding*

*training*  
*doctors reluctant to accept nursing research*  
*low skill mix*  
*lack of staff and finance*

In addition nurses were asked to indicate which of the items posed the greatest barrier to the use of research; 29 (43%) nurses failed to complete this question. Of the 26 (47%) nurses who did complete the question, five (9%) considered the greatest barrier to research utilisation was the lack of time to read research evidence and three (4%) nurses felt the greatest barrier was that the nurses were unaware of research. In addition a single nurse respondent thought that the following items posed the greatest barrier to research utilisation:

*implications for practice are not made clear*  
*the facilities are inadequate for implementation*  
*the relevant literature is not compiled in one place*  
*physicians will not cooperate with implementation*  
*the nurse is unwilling to change*  
*the amount of research information is overwhelming*

Due to the small number of respondents to this question (n=26) it is difficult to conclude what the greatest barriers were.

#### **4.3.3 Facilitators to research utilisation**

The second part of the questionnaire asked the nurses to identify facilitators to research utilisation. Of the 42 individuals who responded to these questions, 37 (71%) suggested ways in which the use of research findings might be facilitated.

The most frequently cited facilitator of the use of research was education on the use of research by specialists in the field of interest, along with journal clubs and research awareness groups which would improve the research knowledge base (19, 51%). Three other facilitators were recorded by a high proportion (over 20% in each case) of respondents and included improved availability of research (10, 27%), facilitation of research use by specialist research nurses (8, 22%) and involvement of the whole care

team, which eight (22%) nurses felt was an important facilitator of the use of research. These four facilitators were further explored and are discussed in more depth in Chapter Five.

**Table 4.7 Reported facilitators to research utilisation.**

	Facilitator	No times suggest	% <sup>+</sup>
1	Education on research and use of research by specialists, journal clubs, research awareness groups	19	51%
2	Availability of research, ease of access to libraries, literature, journals, easy format collated literature	10	27%
3	Facilitation, in the form of special research nurses, educating on research, assisting implementation and providing knowledgeable support	8	22%
4	Involvement of whole care team	8	22%
4	Innovative management, supportive of change	7	19%
6	Improved resources	6	16%
7	Motivated, interested staff	3	8%
8	Relevance of research to clinical setting	3	8%
9	Regular auditing of practice	1	3%
	TOTAL	64*	

\* Respondents may have suggested more than one facilitator of research use.

+ Percentages are reached from the total number of respondents (37) who suggested facilitators to the use of research.

#### 4.3.4 Critical incidents

The use of the critical incident technique has been described in section 4.2.5. A description of specific critical incidents was requested at the end of the postal questionnaire. Nurses were asked if they were able to use research findings in their everyday practice, and were asked to give examples of when they felt able to use research in practice. Thirty three (75%) of the nurses completed this part of the questionnaire.

**Table 4.8 Critical Incidents: Reported instances of research use by 33 nurses.**

Aspect of care	No. of nurses who felt able to use type of research in practice	% <sup>+</sup>
Continence care	11	33%
Wound care	11	33%
Pressure area care	9	27%
Pain management	4	12%
Mattresses	4	12%
Hand hygiene	3	9%
Mouth care	2	6%
Terminal care	1	3%
Touch and the elderly	1	3%
Anticoagulation therapy	1	3%
Reality orientation	1	3%
	48*	

\*one nurse may have reported the use of research in more than one aspect of care

+Percentages are reached from the total number of respondents (n=33) who completed this section.

Although the question asked for instances of research use in nursing practice, every respondent referred to an aspect of care and not a particular instance (see Table 4.8). The aspects of care where nurses felt able to use research in practice were continence care (11, 33%), wound care (11, 33%) and pressure area care (9, 27%).

Nurses were asked if they were unable to use research findings in their everyday practice, and were asked to give examples of why. Seventeen (31%) nurses responded to this question (Table 4.9).

It is of interest that 33 (60%) nurses gave examples of when they were able to use research in practice, but only 17 (31%) nurses gave examples of when they felt unable to use research in practice. Again the response differed from aspects of care expressed

when able to use research in practice to reasons why the nurse felt unable to use research in practice.

**Table 4.9 Critical Incidents: Examples of why nurses felt unable to use research in practice**

Examples given by nurses of why they felt unable to use research in practice	Number of nurses who felt unable to use research	% <sup>+</sup>
Research not relevant to small community hospitals	4	29%
Not enough time to use research	4	23%
Unable to implement incontinence research	4	23%
Medical staff will not accept research findings	2	12%
American research is not applicable to small community hospitals	2	12%
Lack of staff	1	6%
Lack of education	1	6%
Stressful environment and work pressure, not conducive to research utilisation	1	6%
TOTAL	20*	

+ Respondents may have given more than one example of why they were unable to use research in practice.

\* Percentages are reached from the total number of respondents (17) who gave reasons why they were unable to use research in practice.

The numbers responding to this section were very small, however five (29%) nurses felt unable to use research in practice because they felt research was not relevant to small community hospitals. Four (23%) nurses felt unable to use research because of lack of time and four (23%) nurses felt unable to use incontinence research, this was of particular interest as 11 (33%) nurses had said incontinence was an aspect of care where they felt they were able to use research.

## 4.4 Discussion

Research can have little impact on patient care if research evidence is not implemented by clinicians in practice (Dunn *et al.*, 1998). However barriers do exist

to research utilisation. This study identified both the barriers to and facilitators of the use of research in general clinical practice.

#### **4.4.1 Methodological Issues**

Use of a postal questionnaire enabled all nurses involved in care of the elderly to take part. Chapter Five describes how responses to the postal questionnaire were explored in more depth and non-responders' views were also investigated. In order to gain more generalisable results it would have been useful to have gained information on this subject from a larger sample, perhaps from three or four different health authorities around the country. Unfortunately limited time and lack of money did not allow such a broad survey to be undertaken.

Postal questionnaires provide a useful way of gaining information from a large geographically spread sample. However this method of data collection has its limitations, and response rate was low at 55% (55), although such response rates are the norm, especially among busy professional groups (Cartwright, 1978). Response rates varied among the five sites involved: three sites were community hospitals and two district general hospitals. Response rates varied from 68% (19 of 28) to 44% (12 of 27). The site with the lowest response rate was an old hospital being threatened with closure, due to the centralisation of services. The highest response rate was from a site where the senior nurse and ward sister were both interested in the study and the ward sister became actively involved. Response improved among more junior staff at units when senior staff were actively involved in the study.

#### **4.4.2 Population and Sample**

##### *Age*

Staff age was higher than anticipated, although elderly care nursing has been considered a less attractive speciality than certain acute sectors of nursing. However, the age profile of nurses has changed in the past decade according to Cole (1996). The average age of a nurse is 40 according to figures published by the Institute of Employment Studies (Seccombe and Smith, 1996).

### *Job Title and Grade*

The most commonly reported job titles among responders to the postal questionnaire were Associate Nurse, Team Nurse, and Other. Wards are staffed predominantly by these middle grade nurses with 18 (33%) nurses employed at grade E and 20 (36%) at grade D, and therefore it would be expected that most of the responders came from these groups.

### *Qualifications*

Forty four (80%) respondents held the RGN/SRN qualification and 9 (17%) the enrolled nurse qualification. Around half of the respondents (24, 48%) held an ENB qualification, and this was of interest because few other additional qualifications were held. ENB courses are often run locally and are available to staff at minimal expense, they are run regularly and at times convenient to staff, which may encourage the uptake of such courses. It was of note that no member of staff held a university degree. This is perhaps an unusual finding amongst nursing staff in the 1990's although an association may be made between the age group of respondents and qualification. Twelve (23%) nurses held 'other' qualifications which in each case included qualifications which had been gained previously but were not currently being used, these included midwifery qualifications, district nurse qualifications and an ophthalmic nursing diploma. A number of nurses (16, 29%) reported being currently registered on courses, three of these nurses were undertaking part time degree courses.

### *Hours of Work*

The majority of respondents worked part-time. Only 19 (38%) worked full-time, 34 (66%) worked part-time, of whom 11 (20%) worked less than 20 hours per week. Again there may be an association between the age of nurses and the hours worked, because women with families may combine family life with a part-time job. Flexible hours may be available in elderly care units where they are unavailable in the acute sector.

### **4.4.3 Barriers**

In this section, the ten most commonly rated barriers to research utilisation are described along with possible reasons for their rating as a barrier. Sixty seven percent

(37) of nurses felt that research was overwhelming to a great or moderate extent. This is understandable, with the ever increasing array of nursing journals and the pressures for nurses to use research to guide their practice, with no action plan of how this can be achieved. Hunt (1987) uses the term 'information overload' to describe the quantity of literature in some areas. MacGuire (1990) suggested that such information overload could be overcome if relevant research findings were distilled for practitioners to use in clinical practice. The importance of systematic reviews in their ability to locate, appraise and synthesise the literature on a particular topic should not be underestimated. The generation of guidelines from such evidence is one way of making research information more easily accessible to practitioners. In addition the use of meta-analysis would draw conclusions from large bodies of research evidence (Sindhu, 1996) and the Effective Health Care Bulletins which summarise the results of systematic reviews of clinical and cost effectiveness of clinical interventions are another useful way for practitioners to access research information.

Sixty five percent (n=36) of nurses reported that: '*other staff were not supportive of implementation of research findings*'. This item was identified by 70% of nurses in the U.S. sample (Funk *et al.*, 1991b). It has been documented for some years that there is a lack of administrative and financial support for the implementation of research (Kirchoff, 1982). Nurses may perceive implementation of research findings an addition to their already busy workload, and as an aspect of their work which is low priority. Lack of support for implementation of research findings may be due to individuals not knowing how to put research in practice and this is perceived as lack of support from other staff, who in turn do not know how to implement research findings.

The problem of statistical analyses not being understandable was rated as a moderate or great barrier by 36 (64%) nurses. This factor was reported as a moderate or great barrier by 68% of nurses in the US sample (Funk *et al.*, 1991b) which is a similar finding. Traditionally research methodology and statistical analysis have not featured highly within nurse education (Gould, 1986). However, the recent changes in nurse education and the moves toward graduate education may go some way to prepare



nurses to understand statistical analyses. The educators themselves will need to be educated in understanding statistical analysis before they can hope to teach nurses. In addition post-registration education will need to be undertaken in order to address this issue amongst qualified staff.

A commonly perceived barrier to the use of research in practice was that there is insufficient time on the job to implement new ideas, a view held by 34 (64%) nurses. Seventy five per cent of nurses in the US sample reported this as a great or moderate barrier (Funk *et al.*, 1991b). This perceived barrier may be translated into the fact that nurses see the implementation of research findings as low priority and therefore within their busy schedule it does not feature as a dominant issue.

Sixty two percent (34) of nurses felt that results from research are not generalisable to their setting, a view held by 68% of nurses in the US sample (Funk *et al.*, 1991b). This response may have been a particular barrier in community hospital settings. Nurses may have difficulty in identifying with research findings from a clinical trial in a teaching hospital and applying it to an eight bedded nurse led community hospital. This type of barrier is often a reflection on research publications which rarely clearly specify implications for clinical practice which could be relevant in any number of settings.

Inadequate facilities for the implementation of research findings were considered a barrier to the use of research by 34 (62%) nurses. This again may be a problem specific to nurses in community hospitals for elderly care patients, who may perceive large general hospitals to have greater facilities for implementing research. Certainly community hospitals do not have easy access to library facilities or research staff who may be able to aid implementation. However, 68% of nurses in the US sample reported this barrier (Funk *et al.*, 1991b) and their sample was recruited from varied clinical settings.

Thirty three (60%) nurses felt that because relevant literature is not compiled in one place it poses a barrier to research utilisation, and 63% of nurses in the US sample

viewed this as a barrier (Funk *et al.*, 1991). Busy clinicians need easy access to research information (Hunt, 1981; MacGuire, 1990; Closs and Cheater, 1994). Chapter Six describes one method of compiling relevant literature on incontinence into a user friendly handbook. In addition meta-analysis (Sindhu, 1996) and rigorously developed guidelines (Effective Health Care Bulletin, 1994) may offer useful ways of collating large bodies of research evidence into more concise distillations of research. The compilation of relevant research evidence is an issue which can and should be addressed, however who should be responsible for compiling research evidence on a given subject remains a subject for debate (MacGuire, 1990; Closs and Cheater, 1994). Perhaps in the future research studies should include a substantial budget for a three month dissemination period, whereby researchers are required to give informal lectures and seminars to clinical staff and provide a short report of implications of a given study for clinical practice. Such a short dissemination period would mean that information was relayed back to users promptly and may fall within the researchers contract period.

Thirty three (60%) nurses felt they did not have enough authority to change patient care procedures. Whilst this may be the case, perhaps the nurses did not feel capable themselves of critically appraising research evidence to collect evidence from which to change patient care procedures. This view was held by 74% of nurses in the US sample (Funk *et al.*, 1991b).

The nurse not feeling able to evaluate the quality of research was a barrier reported by 31 (46%) nurses, a view held by 49% of nurses in Funk *et al.*, 's 1991 study. This is a barrier that is easy to remedy with adequate resources spent on nurse education to teach critical appraisal skills at both pre- and post-registration, and recently regional strategies have been devised for educating clinical staff on critical appraisal skills resulting from the NHS Research and Development objectives (Promoting Clinical Effectiveness, DOH, 1996a, Research and Development: Towards an Evidence Based Health Service, 1996b, The New NHS: Modern, Dependable, 1997, A first class service: Quality in the New NHS, 1998).

A similar number of nurses (31, 46%) reported that they did not have time to read research, a view held by 67% of nurses in the US sample (Funk *et al.*, 1991b). This indicates that reading research is seen as low priority; again, improvements in education may lead to nurses seeing the value of using research evidence to guide practice and the necessity for time to be set aside in the form of one study day per month for literature searching and reviewing. Ideally within a unit, nurses may show a special interest in a subject, perhaps incontinence or wound care. Such interests should be encouraged and the interested individual could gather information on the subject to informally disseminate to colleagues.

Few nurses (16, 29% in each case) reported that they did not see the value of research or did not feel there was a documented need to change practice. These views were reported by 34% of nurses in the U.S. sample in each case (Funk *et al.*, 1991b). This indicated that the majority of nurses did see the value of research, and although they did not always act on this opinion they were aware of a documented need to change practice. This result was similar to that found from Funk's (1991) study in which 34% of nurses reported that they did not see the value of research. The recognition of the value of research amongst the sample may have resulted from increasing awareness and documentation of the value of research in the nursing literature and DoH circulars.

Response from nurses who were asked to indicate any additional barriers to research utilisation other than those items identified in the scale were limited. Only nine (16%) nurses completed this section. This section appeared on page five of the questionnaire and were the first open response questions. However, this low response may simply indicate that the barriers scale comprehensively covered all barriers to research utilisation.

When nurses were asked to indicate which item posed the greatest barrier to nurses in using research, only 26 (47%) responded. Of those who did respond the greatest barrier posed was lack of time, however this was only rated as the sixth greatest barrier overall.

#### **4.4.4 Facilitators**

Having rated the barriers to the use of research, nurses were asked what things facilitated the use of research in practice. No prompts were given and six lines were available for responses. On average, each respondent gave two possible facilitators to the use of research in practice. The most consistently reported facilitator was education (19, 41%), and this was detailed as 'continuing education', 'education on research', 'journal clubs' and 'research awareness groups'. These methods of facilitation are well documented in the literature (Hicks, 1994; Closs and Cheater, 1994).

The second most commonly reported facilitator was accessible information, reported by 10 (27%) nurses. Nurses proposed specific ways in which research could be made more accessible and suggested 'easy format' collated literature. The third and fourth most commonly reported facilitator was reported by eight (22%) nurses in each case, and included facilitation of change and involvement of the whole care team.

These four most commonly cited facilitators were explored in more depth using semi-structured interviews described in Chapter Five and contributed to the intervention to promote the use of continence research in practice described in Chapter Seven.

#### **4.4.5 Critical incidents**

Only 33 (60%) nurses completed the critical incident section, and this may have been because the incidents were included at the end of the questionnaire when respondents may have been keen to finish their participation. The three most commonly recorded aspects of care where nurses felt able to use research in practice were continence care, wound care and pressure area care. It may be that these aspects are particularly common in the elderly care setting where the survey was carried out, or these aspects were referred to because a large body of research exists in these areas ready for implementation. Alternatively it may be that aspects of care such as continence and skin care are considered areas which are largely within the nursing domain, where

nurses are autonomous in their decision making and where the medical profession is less dominant.

The three most commonly cited reasons why nurses felt unable to use research in practice were: research is not relevant to small community hospitals, reported by five (29%) nurses, there is not enough time to use research and they feel unable to implement incontinence research, both of these reasons being given by four (23%) nurses.

When nurses were asked to describe an incident when they felt unable to use research in practice only 17 (31%) gave a response, and the response to this negative critical incident was lower than the response to the positive critical incident which 33 nurses responded to. This may have been because nurses felt uneasy about admitting they had specific difficulties in using research.

A postal questionnaire did not provide the most efficient way of gathering critical incident data, however the following chapter describes 16 interviews which explored many of the issues raised in this chapter in more depth, including the re-presentation of the critical incident questions to questionnaire responders.

## **4.5 Summary**

This chapter has presented and discussed the methodology adopted and results of a postal questionnaire to identify the barriers and facilitators to the use of research in practice. Fifty five nurses responded to the survey and a number of barriers and facilitators to research utilisation were identified. The ten most commonly rated barriers to the use of research in practice were:

- 1 Research is overwhelming.
- 2 Other staff are not supportive of change.
- 3 Statistical analyses are not understandable.
- 4 There is insufficient time in the job to implement new ideas.
- 5 Results from research are not generalisable.
- 6 There are inadequate facilities for the implementation of research findings.

- 7 Relevant literature is not compiled in one place.
- 8 The nurse does not have enough authority to change practice.
- 9 The nurse feels unable to evaluate the quality of research.
- 10 The nurse does not have time to read research.

The results of the postal questionnaire and the identification by nurses of specific barriers and facilitators are explored in more depth in the following chapter before the results of Chapters Four and Five are combined to provide the basis for clinical interventions to promote the use of continence research in clinical practice.

## **Chapter Five: Exploring nurses' views on the use of research in clinical practice**

## **5.1 Introduction**

The present chapter explores some of the issues identified in the postal questionnaire presented in Chapter Four in more depth, using semi-structured tape recorded interviews. The chapter presents a small qualitative study and begins with the research objectives and the study design. A short section describes the methodological concept of triangulation before describing the population and sample, methods of data collection, pilot study and ethical considerations. The section describing data management and analysis explains the use of content analysis. The presentation of findings is explained and the concept of a deviant case is outlined. Finally, the findings and discussion are presented, concluding with a summary section.

## **5.2 Methods**

### **5.2.1 Objectives**

There were two main research objectives in this section:

1. to explore information highlighted in the postal survey related to the barriers to and facilitators of research utilisation in more depth.
2. to investigate the views of individual nurses who did not respond to the survey and to determine whether the views of responders and non-responders differed on the use of research in practice.

This qualitative part of the study was guided by research questions rather than hypotheses. The following questions were considered important:

- Do nurses consider the use of research important to clinical practice?
- Do the views of nurses who respond to a postal questionnaire differ from those who do not?
- What barriers obstruct nurses from using research in practice?
- Do nurses know what implementation strategies would help them in clinical practice?



### 5.2.2 Research design

The research design adopted for this stage of the study utilised a qualitative approach of taped semi-structured interviews which sought to explore nurses' responses to the BARRIERS scale in greater depth (Polit and Hungler, 1991; Field and Morse, 1992). The semi-structured interview was informed by and constructed based on a review of the literature and the results of the postal questionnaire presented in Chapter Four.

### 5.2.3 Triangulation

The dominance of quantitative, as opposed to qualitative, methods in social science and particularly health services research has been a matter of concern to many authors (Pope and Mays, 1995). The strategy known as triangulation seeks to utilise both methodologies in a complementary manner. According to Talbot (1995) *"triangulation of methods usually refers to the use of two or more research methodologies to study a particular phenomenon"*. Polit and Hungler (1991) define the triangulation of methods as *"the use of multiple methods to address a research problem"*. It can be argued that the blending of quantitative and qualitative data is useful because where results from both types of data converge, each data-type supports the validity of the other (Field and Morse, 1992; Silverman, 1993; Bradley, 1995). Methodological triangulation was adopted in the current study for two reasons: firstly, to investigate the responses of non-responders and thereby avoid the problem of non-response error (Cormack, 1991), and secondly, to explore in more depth issues which were impossible to pursue in a simple postal survey. The use of both quantitative and qualitative methodology is likely to enhance the validity of the study by posing questions in different ways, using both fixed response questions and a more searching methodology based on the flexible use of open-ended interview items.

### 5.2.4 Population and Sample

The sample who agreed to take part in a semi-structured taped interview comprised 16 qualified nurses. This sample was drawn from a total population of 100 nurses from elderly care units in one health authority (HA1) in the South of England (a description of the geographical setting is provided in section 4.2.3). Following the results of the postal questionnaire reported in the previous chapter, a random sample

was drawn from both responders and non-responders to the questionnaire. It was important to establish whether the views of non-responders differed from responders in relation to the use of research in practice. A random sample of non-responders (9) were asked to participate in a one-to-one interview in order to explore their ideas on the use of research in practice. This sample was randomly selected from the 45 non-responders to the postal questionnaire by random number generation using a hand held calculator. Seven responders were invited to participate in an interview, but this sample was not randomly selected. Following a review of the results from the postal questionnaire quota sampling was undertaken. This enabled respondents who had provided interesting responses to expand on their comments (Polit and Hungler, 1991); these responders included those nurses who had provided different responses. The numbers interviewed were limited by time and the financial constraints on the study. Table.5.1 shows the number and type of interviewees.

Table 5.1 Biographical details of the sample of nurses selected for interview

Nurse No.	Post	Grade	Year of qualification	Participant status
01	SN	E	1984	Non-responder
02	SN	E	1980	Non-responder
03	Sister	G	1975	Non responder
04	EN	E	1970	Responder
05	SN	E	1954	Responder
05	EN	E	1972	Non-responder
07	SN	D	1978	Responder
08	SN	D	1995	Non-responder
09	SN	E	1982	Non-responder
10	EN	E	1987	Non-responder
11	SN	E	1993	Responder
12	SN	E	1987	Responder
13	Sister	G	1957	Responder
14	SN	E	Missing	Responder
15	SN	E	Missing	Non-responder
16	Dep. Sister	F	Missing	Non-responder

In total 16 nurses were interviewed, ten staff nurses, three enrolled nurses, two ward sisters and one deputy sister, each of the geographical settings were represented in the sample.

The sample size was initially proposed in order to provide a sufficient spread representing both respondents and non-respondents to the previously described postal questionnaire. When the qualitative study was commenced it was anticipated that interviews would continue until no new themes emerged (Morse 1991). Once a wide range of themes had emerged from the interviews, the concentration was on the development, density and saturation of categories and the data gathering became more focussed (Strauss and Corbin 1990). In addition, the sample size was governed by the financial and time constraints imposed on the study.

**Table 5.2 Comparison of biographical details of responders and non-responders.**

Responders			Non-responders		
No.	Post	Grade	No.	Post	Grade
4	SN	E	5	SN	E
1	SN	D	1	SN	D
2	EN	E	1	EN	E
			1	D Sr	F
1	Sr	G	1	Sr	G

### 5.2.5 Methods of data collection

A semi-structured interview schedule was compiled based on the results of the postal survey (Chapter Four), two unstructured pre-pilot taped interviews, meetings with the local expert in the field of incontinence, who was the clinical nurse specialist (continence adviser), and the literature (Chapter Two and Three). Seventeen questions were included in the semi-structured interview, and these reflected the most frequently cited issues arising from the postal survey. Semi-structured interviews may be defined as focused interviews which are organised around areas of particular interest, while still allowing flexibility in scope and depth (Polit and Hungler, 1991). The semi-structured interview was designed to be flexible and to give both the researcher and the participant the opportunity to expand on the primary questions. A copy of the interview schedule is included in Appendix D. The need for a semi-structured instrument was considered important within this study, as much of

the information gained would be 'confirmatory' with relatively focussed research questions (Miles and Huberman 1994). Miles and Huberman (1994) suggest that the use of instrumentation within qualitative research is important to maintain focussed and to avoid the collection of superfluous information which, they suggest is common amongst researchers who are new to the qualitative research process.

Nurses were identified for interview as responders or non-responders from the original nurse lists used for the postal questionnaire provided by nurse managers, and each was asked if they would be prepared to take part in a one-to-one taped interview and written consent was obtained before the interview commenced. Each interview lasted between 30 minutes and one and a half hours<sup>1</sup>. The interviews took place at each of the units, in areas identified by the senior nurse or the participant, usually quiet rooms or offices near to the ward area, thus ensuring that the nurse was available if required on the ward, but providing privacy for the interview. The interview consisted of questions relating to the care of incontinent patients and to the use of research in practice and covered the following themes:

- i) influences on changes in practice
- ii) factors which restrict the use of research in practice
- iii) factors which help the use of research in practice

Each interview began with a straightforward and general question about care of patients with incontinence, this question was useful in putting participants at ease. Most of the nurses had not been involved in research before and the idea of having the interview taped sometimes made them feel anxious and self-conscious. However because the first question was fundamental and related to their daily work, its familiarity helped to reassure participants because incontinence was an aspect of work with which they were familiar. The beginning of the interview was important in establishing a rapport between the researcher and the participant. The participants felt vulnerable because they felt their clinical practice was being scrutinised. It was therefore important at an early stage that the researcher showed interest in what was being said but did not react to methods of practice described. Each participant was given the opportunity to discuss issues related to continence or using research which

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<sup>1</sup> With the exception of one participant who was classified as a deviant case (Silverman 1993)

they felt were important. Particular attention was given to ensure that participants had nothing more to add and were happy with the content of the interview.

In addition, the critical incident technique was used to explore contexts in which nurses felt able to use research in practice and contexts where they felt unable to use research in practice. The critical incident technique has been described previously. It was intended that the information gained from the interviews would provide information which could be used to design an intervention to aid the use of research in practice.

### **5.2.6 Pilot Study**

A pilot study was conducted to test the interview schedule, feasibility of the study as well as the appropriateness of the information sheet (Appendix B) and consent form (Appendix C) to nurses. Three nurses were interviewed using the pilot interview, and some minor textual amendments were made to the schedule before its use in the main study. This was achieved primarily by taking note of the language used by nurses and changing questions so that they were easily understood, using familiar language.

### **5.2.7 Ethical Considerations**

Ethical approval was obtained from the local ethical committee in May 1994. The project was explained to the nurses verbally and they were provided with an information sheet about the project. It is necessary for subjects to have accessible, information about the research to enable them to give informed consent to their participation (Polit and Hungler, 1991). Written consent was obtained before tape recording of interviews was undertaken. Interviewees were assured that the tapes would be used solely for the purposes of the study and once analysed would be erased. All responses to questions relating to the use of research were treated confidentially. Throughout the study, participants were aware of the researcher's role, and no data were collected without permission. Participants' names in field notes and interviews were coded. All data were stored in locked cabinets and identification sheets were only available to the researcher.

### **5.2.8 Data management and analysis**

#### *Content Analysis*

Content analysis was used to evaluate transcripts of tape recordings. Content analysis can be described as a systematic procedure for summarising, standardising, comparing or otherwise transforming existing records (Smith and Manning, 1982). An important distinction in content analysis is the use of latent or manifest content analysis (Field and Morse, 1992). Manifest content analysis refers to items that are physically present, whilst latent content analysis refers to items which are inferred from the data. Because latent content analysis can be problematic and unreliable, the use of independent coders is essential (Smith and Manning, 1982; Field and Morse, 1992). This study used both manifest and latent content analysis. Two independent coders were used to check the interpretation and categories of themes on four of the transcripts, and all conclusions were checked against the current literature on research dissemination and utilisation, and incontinence.

Content analysis provides a method of identifying themes within a text and counting the frequency with which they occur, it involves reducing qualitative data to separate coded units of information. Coded units refer to pre-defined categories identified by the researcher. Content analysis is a time consuming process, although ethnographic software packages have made the analysis of large data sets more efficient (Norbeck, Chafetz, Skodel-Wilson and Weiss, 1991). Content analysis entails the coding, categorising and classifying of texts. Content analysis is rarely explained in detail in research papers and reports, which is perhaps why qualitative research is sometimes labelled 'unscientific' (Pope and Mays, 1995). The dependability, credibility and transferability of content analysis may sometimes be questioned because it is open to investigator bias. In the present study each stage of content analysis will be explicitly described in order to avoid these dangers. The following five stage method was developed by Perry (1993) and consists of the following components: transcripts, themes and categories, reading and coding transcripts, refining categories and presentation of findings. The analysis of deviant cases is presented as a sixth and final stage in the analysis.

### *Transcripts*

All sixteen tape recorded interviews were transcribed by the researcher either on the day of or on the day following the interview. Once the tapes were transcribed, they were replayed and the transcription was checked for accuracy (Field and Morse, 1992). The first four interviews were transcribed and analysed before continuing with the transcription of subsequent interviews. By transcribing in this way guidance for the following interviews was provided (Strauss and Corbin, 1990). Each interaction (both question and response) in each transcript was numbered to provide clear evidence of where data were obtained. Transcripts were written to capture content clearly but did not include changes in tone of voice or simultaneous speech.

### *Themes and Categories*

Themes and categories were identified from the data, and cross-verification of the categories was achieved by identifying the consistency of themes within each interview and by comparing the replies from multiple interviews. Two independent researchers also randomly checked the themes and categories on a sub-sample of four (25%) interview transcripts to ensure dependability of categorisation (Silverman, 1993, Miles and Huberman 1994). Themes and categories were theoretically derived from the literature and the previously used postal questionnaire (reported in Chapter Four), and confirmed in the taped interviews. Mutually exclusive descriptive categories were identified in order to understand nurses' ideas relating to the use of research in practice and were entered into a coding framework. Each theme was further divided into categories around the original questions and around themes which had emerged from the data. Analysis was based on this coding framework.

### *Reading and coding transcripts*

All 16 transcripts were read by the researcher and four transcripts were read by two independent research staff to check that the transcripts were coded correctly. The coding frame was tested on transcripts from the pilot study before analysing the main study data. Each transcript was read and coded. Field and Morse (1992) describe coding as the process of identifying recurrent words, phrases, themes and concepts within the data, so that the underlying patterns can be identified and analysed. Strauss and Corbin (1990) describe coding as the process of analysing data. Because each

transcript and each interaction was separately numbered, the researcher could go back to the original transcripts and relocate any quotation from the coded description.

### *Refining Categories*

Each coded unit was copied onto an index card for ease of reference. Each card was identified by the relevant coding category e.g. the patient, the nurse. The participant's identification number giving information on the participant's work location and status as well as the line and page number reference was included for each coded unit. This system provided easy reference to the original transcript giving identification of the source of the quote. In addition it allowed the coded units to be manually ordered and sorted into piles according to grade, location and respondent status for comparison purposes. The card index system allowed constant comparisons to be made between categories and participants.

### *Quantitative versus qualitative methods – some key contrasts*

This chapter comprises a small piece of qualitative work, in order to overcome the difficulties of ensuring good quality, trustworthy and authentic findings from qualitative data, Miles and Huberman (1994) suggest the use of certain criteria by which data quality can be measured, these include:

Objectivity/Confirmability

Dependability or Auditability

Credibility or Authenticity

Transferability or Fittingness

*Objectivity/Confirmability* refer to the explicit detail of the methods and procedures used within the study. This detail would allow the process of data collection and analysis to be followed up as part of an 'audit trail'. The current study endeavoured to detail all aspects of the research process to allow such confirmation.

*Dependability or Auditability*. These issues can be addressed by ensuring the use of coding checks and involving peer and expert review in the research process. This study involved two independent researchers to check the themes and categories drawn from the data and employed expert opinion in the development of the semi-structured interview. This process is often referred to as reliability in quantitative research.



*Credibility or Authenticity.* Miles and Huberman (1994) suggest that credibility can be achieved by determining the plausibility or ‘truth’ of the findings from a qualitative study. They also suggest that triangulation (as used in these studies) which produce generally converging conclusions can show credibility. Within quantitative research, this is often referred to as internal validity.

*Transferability* can be achieved by full description of the sample, instruments and processes by which data were obtained. This process is often described as external validity in quantitative research.

In summary, this small qualitative study formed part of a wider investigation employing both quantitative and qualitative methods. The use of qualitative methods within this project allowed the testing of hypotheses to be undertaken to determine the most acceptable methods of dissemination and implementation of research evidence in clinical practice. Some of the hallmarks of quantitative/qualitative methods are discussed in Chapter Eight, section 8.2.

### **5.2.9 Presentation of Findings**

Results from the above processes were presented in relation to four broad themes relating to the barriers to and facilitators of research utilisation.

<i>Barriers related to:</i>	<i>Facilitators related to:</i>
The patient	Education
The nurse	Accessibility of information
Research	Facilitation
Resources	Whole team involvement

The themes were described and interpreted using a limited number of excerpts from the transcript rather than quoting examples from the entire sample.

### **5.2.10 Deviant Cases**

It was evident that data from one interview represented a deviant case (Silverman, 1993). Silverman (1993) refers to deviant cases as those cases which deviate from the norm, and give responses which do not reflect those given by other respondents. He

suggests that recognition of these cases is an important part of quality control in research and serves to increase the dependability and inclusiveness of analytical schemes. Within the study the information given by one interviewee identified different themes from the other cases. The interview itself only lasted 15 minutes, the shortest of all the interviews. The source of this nurse was different from the others: an interview had been arranged with another nurse but she was unable to take part and therefore the inclusion of this nurse was purely opportunistic. She had not responded to the postal survey (reported in Chapter Four). The presence of a deviant case highlights difficulties which can arise when a respondent is not familiar with ideas relating to the use of research to guide practice. In order to illustrate problems associated with the deviant case, some short quotes have been included.

The following direct quotes illustrate that this interviewee was not familiar with being questioned about practice, and seemed to have little understanding of the possible role of research in guiding practice. The interviewee was asked to describe the relative importance of the care of incontinent patients within their role.

(05/8) 'Well (is it important) yes and no, because they do wear pads, so if they're incontinent you just wash them and change them.'

The interviewee was asked whether they felt able to use research evidence in clinical practice.

(05/48) 'I haven't done any research.'

When asked whether the interviewee had ever felt unable to actually implement (use) research findings in clinical practice, the response was:

(05/52) 'I haven't read any.'

The views expressed by this participant were very different from those of the 15 other interviewees and the case was treated with some caution as it is unrepresentative of the sample.

## 5.3 Findings and Discussion

Within the interviews undertaken with nurses in the elderly care units, nurses identified four factors which influenced the use of research in practice in either a positive or negative way. These factors related to: the patient, the nurse, research or resources. Similar themes or subscales were identified using the tool developed by Funk *et al.*, (1991a) and described in Chapter Four. These subscales related to characteristics of the nurse, the setting, the environment and the presentation of research. Within the four themes identified from the 15 interviews, these same issues emerged, although the Funk *et al.*, (1991a) subscales of research characteristics and the presentation of research were combined. The additional theme which emerged from the interviews were factors relating to the patient and the effect of the patient on decision making, related to the use of research in practice. The following findings will be presented in terms of these four recurrent themes: the patient, the nurse, research and resources.

### 5.3.1 The patient

Overall, those nurses interviewed felt that the care of incontinent patients was an important aspect of their role. They described its relative importance in relation to the well-being of the patient. Throughout the interviews, the patient was central in decision making relating to the use of research in practice. For some nurses aspects of the patient, e.g. confusion, meant that they would not always use research to guide practice.

Some nurses felt that individual patients actually influenced whether or not they utilised research evidence in practice. The theme of the patient as an influence on practice was recurrent, in terms of both their physical well-being in relation to continence care and their contribution in determining more general care when referring to the use of research in practice. So, whilst the thrust for using research to guide practice has come from government papers (DHSS, 1972; DOH, 1991; DOH, 1993a), nurses themselves consider improvements in patient care to be the driving force behind using research in practice. The nursing staff interviewed recognised that by implementing research findings they may be able to improve the care of patients:

(02/4) 'It's very important because it brims over into other areas, the general well being and confidence of patients as well. It's terribly important - I probably don't spend enough time on it actually.'

Respondents gave a variety of reasons why they felt their practice had changed regarding the care of incontinent patients since they qualified. Most nurses gave more than one reason why they thought this change had taken place. These reasons included the fact that patients were now treated as individuals; that there was increased awareness about incontinence by both patients and nurses; and that more products were now available in addition to the influence of research on nursing practice regarding incontinence. No-one referred to the governmental push for research-based nursing:

(02/5) 'I think there's more of an emphasis now on patients being continent because I think that we treat patients more as individuals now than when I qualified, I mean we just used to get down and do what had to be done, it sounds awful, but I think yes it's more important now.'

It was evident from the interviews that product representatives from commercial companies were capable of influencing changes in practice. This was supported in the Roe *et al.*, (1994) study investigating the treatment of patients with chronic leg ulcers in the community. Roe *et al.*, (1993b) reported that the use of dressings and treatments for leg ulcers may reflect 'a more active company representative'. One nurse indicated that company representatives influenced what products were used.

(05/12) 'Well you find reps come with different pads, incontinent pads and wipes.'

Some nurses recognised that research had an influence on their practice, and they also noted that sometimes an intermediary would disseminate research evidence to them,

bringing research ideas into clinical practice. In the following quote the continence adviser is cited.

(10/8) 'Research basically people try new ideas, there's a continence adviser in the trust and she comes in with new ideas.'

Nurses stated that it was patient choice which influenced their decision to adopt research in practice and referred to patients' increased awareness of new information. This information may have been acquired from the media, although there have in recent years been some improvements in patient information giving, particularly since publication of The Patients' Charter (DOH 1992). There was recognition that sales representatives could influence practice, but that practice should be influenced by patients' wishes, not eager sales representatives.

(04/25) 'Sometimes it can be difficult because everyone's selling something and then they say this works and this works, so everyone should base it on their own patients.'

In relation to issues of incontinence those nurses interviewed felt that continence was an important aspect of their care because of the profound affect it has on patients. Nurses interviewed reported that incontinence affects patients' confidence, dignity, morale and feelings. A number of authors have recognised the negative effect incontinence can cause in terms of distress and embarrassment (Ouslander and Abelson, 1990; Brocklehurst, 1993; Sandvik, Kveine and Hunskaar, 1993; Grimby, Milsom and Molander, 1993). For most nurses interviewed, the reason they felt continence care was an important part of their role was because of its impact on the patient.

(09/4) 'Well it affects people's morale, it stops people from being able to behave normally.'

(07/4) 'Well it's very important from the point of view of the patient.'

(07/8) 'I would say now that patients are treated far more now as individuals and you look at them as a whole person rather than as a specific problem.'

Throughout the interviews responses related to patients' well-being, and the use of research in practice was considered of importance because of the potential benefits to patients. Many of the issues related to the implementation of research findings into clinical practice do not overtly state that the reasons for implementing research in practice are in the pursuit of improvements in patient care. However, the nurses interviewed considered this to be of central importance.

(09/8) 'Whether you use research depends on the individual patient.'

(10/14) 'I think sometimes you've got to look at an individual regardless of what research has got down, and use what is available.'

(15/12) 'You may not use research because the patient doesn't like the idea or feels that they have done it that way and they want to keep it that way, and you have to go along with their wishes.'

Undoubtedly, the individual patient plays a central role in whether research is used to guide practice.

### **5.3.2 The nurse**

Attributes of the nurse were also reported as a factor which influenced the use of research in practice and references were made to their lack of knowledge of research preventing the use of research in practice. Most nurses felt that some of their practice

was research-based but not all. They provided a number of reasons why it was sometimes difficult to base nursing practice on research. Often these reasons related to the nurse herself, who felt she lacked the skills to appraise research. This problem is widely documented in the nursing literature, and the teaching of critical appraisal skills in both pre- and post-registration education is recommended in recent studies by Hicks (1994) and Church and Lyne (1994).

(02/12) 'Not all research is good, so I think nurses should be able to appraise research reports themselves. It's no good saying research says this, so we'll do it. I think we should be able to look at research and then critically appraise it.'

A need for increased awareness of research and the skills to appraise research was also identified. Issues of professionalism were highlighted by some nurses, indicating that a research base is necessary if nursing is to be considered a profession. The use of research in the pursuit of professionalisation is a contentious issue widely discussed in the nursing literature. However those nurses who brought up the subject in interviews did not provide detailed justifications of their opinions but merely stated their belief that research and professionalisation are closely linked. This view is backed by Lacey (1994), who suggests that the basis of a profession is rooted in its relationship to research.

Age and the number of years since qualification were considered to be features of the nurse which had implications for the use of research in practice. The mean age of nurses responding to the first phase questionnaire was 43 years and the mean year of qualification 1975, indicating that within this study a wide age range was represented from age 22 to 59 years.

(02/15) 'I think the younger the nurses tend to be and the more recently they've trained the more likely they are to accept research reports.'

(14/25) 'I think it's the, "it was good enough ten years ago, why can't we do it now" attitude.'

It was suggested that older nurses were less likely to want to change, especially those who had trained many years earlier. Nurses were keen that education on research awareness skills were given to post-registration nurses and felt that such education would increase the use of research by nurses in practice. Church and Lyne (1994) recognise the need for critical appraisal skills for nurses to avoid the assumption that, if a research report is published, its findings must be correct.

(11/28) 'Education within training is important, but also by setting up research awareness groups within an area with someone who is qualified to co-ordinate the group.'

The nurse was considered of key importance when implementing research in practice, but the nurses interviewed were aware that they did not always have the pre-requisite skills to use research in practice. Closs and Cheater (1994) point out that a comprehensive approach to the incorporation of research into nurse education is essential. This would go some way to ensuring that nurses have the necessary skills to use research in practice. Most of the nurses interviewed recognised that good communication between staff was a key issue when bringing research into practice.

The skills nurses felt they required were, research awareness skills along with good communication skills between nurses. Minimal reference was made by the nurses interviewed to the multi-disciplinary team. This may have been because many of the interviews were undertaken within community hospitals which in practice are often nurse led.

### **5.3.3 Research**

A theme which ran through the interviews was research itself and some of its characteristics including accessibility and methodological soundness. Most nurses recognised that research can be overwhelming.



(08/15) 'Research is something that's ongoing, if you try to read everything on everything you will get bogged down with it, it will become overwhelming.'

Most nurses interviewed recognised that not all research is good or relevant.

(11/15) 'If the research is valid then things need to change, it's for the better and it's moving with the times.'

### *Statistical analyses*

The overwhelming majority of nurses felt that statistical analyses were not understandable. Hunt (1981) states that most research reports are written for other researchers and therefore 'might as well be in a foreign language' as far as practising nurses are concerned. This view is supported by Funk *et al.*, (1989a), who suggest that researchers tend to write for other researchers and claim that the actual meaning of knowledge to practitioners is often ignored. This view was mirrored by many of the nurses interviewed.

(03/22) 'I think statistics are a bit boggy.'

(08/20) 'If statistics are published in the Nursing Times, the Journal of Advanced Nursing or the British Journal of Nursing, they should be able to be understood and user friendly, because this is most nurses' primary access to research.'

(13/28) 'It (research) has to be written in such a fashion that you can read it and understand it.'

The nurses interviewed considered some of the limitations of research could be overcome by making research accessible, through improving the availability of

information and by someone co-ordinating the dissemination of the information. MacGuire (1990) suggests that the synthesis of existing research is not a high priority for researchers or their funders, but stresses that presentation of research findings in an acceptable form to practice is important to transfer research into practice.

(07/32) 'Someone needs to co-ordinate getting information together.'

The issue of co-ordinating the dissemination of research information is very important, but questions remain in the literature on who should be responsible for the dissemination of research information (Closs and Cheater, 1994). Many nurses interviewed considered the researcher to be the most appropriate person to communicate research information to practising nurses.

(13/30) 'The communicator is the person who is doing the research, so if they're not communicating then, however good a researcher, they are they are not doing their job.'

The quality of research influenced some nurses on whether or not they would use research in practice. Some nurses reported that available information helped them to use research in practice. Making research literature accessible to practising nurses has been the objective of a number of research studies (Wilson-Barnett *et al.*, 1990; Williams *et al.*, 1995).

Time was given as a general reason why practice was not research based. Although this may have been linked to information overload which MacGuire (1990) suggests is a problem in some areas of nursing care, there is not enough time to read research evidence on a subject because so much evidence is available. MacGuire suggests that research findings should be 'distilled' into a user-friendly form which would not entail such a great expenditure of time.

(12/10) 'If we are actually going to use research we have to do a lot of reading in our own time, and I don't have it, spare time, so that's what actually limits me.'

Although nurses gave a number of reasons why their practice was not always research based, they felt overall that nursing practice should be based on research primarily because of the potential improvements in patient care.

(15/15) 'Because I don't think we will ever learn or develop if we just do it that way because it has always been done that way. We need to actually justify why we are doing things. Is it for the best possible reasons, are we doing things right for the patient? If nothing was researched then we wouldn't have a baseline to actually see if we are improving or whether what we are doing is the right practice.'

An issue which overlapped two categories was the issue of professionalisation, which arose in both issues relating to the nurse and to research. Some nurses recognised that there was a need for nursing practice to be based on research if nursing was to be considered a profession.

(12/12) 'I think nursing practice should be based on research, because I think if we're actually going to prove ourselves as a profession in relation to our pay and to be respected by other professions then yes, it's got to be based on research.'

### **5.3.4 Resources**

A final theme which ran through the information given by the nurses interviewed was that of resources, in relation to time, money and availability of products. These factors were extrinsic factors which would probably arise within any health care research, and they are constraints which are both common and difficult to overcome.

However, if the limitations of time and money were overcome, the implications for the patient, the nurse and the use of research would be enormous.

### **5.3.5 Barriers to the use of research in practice**

The common themes underlying nurse responses have been described. In addition an attempt has been made to explore other specific barriers to research implementation perceived by nurses. These include the perception that research is overwhelming, and a lack of staff support skills for evaluating research studies. Four barriers to the use of research in practice were identified from the postal survey and were presented to the interviewees in order to gain the views of non-responders and to explore further respondents feelings on these issues. They included the ideas posed by nurses that:

- research is overwhelming
- other staff are not supportive of change
- statistical analyses are not understandable
- nurses do not always feel capable of evaluating the quality of research.

Some nurses recommended ways of overcoming the fact that research was overwhelming and suggested making research more accessible and stressed that lack of time meant that research was overwhelming.

(07/15) 'In certain areas it (research) can be overwhelming. There's so much different research being done, it is hard to know which one to put into practice, conflicting advice really. It is difficult particularly with the role you play, it's finding the time. I think someone should have the specific role to sift through the research, someone who specialises in that to make sure that it does end up being put into practice because it's such a waste otherwise.'

(08/15) 'Research is something that's ongoing. If you try to read everything on everything you will get bogged down with it, it will become overwhelming, I think you have to look at your clinical area, assess where the priority

needs are for your clinical area and where they need improving and concentrate on those areas one at a time.'

(09/14) 'I find nursing literature incredibly tedious so I just want somebody to say 'This is what we're trying to do'. I just want it easily digestible in bite-size pieces, rather than reading a whole book on a certain subject, I want it summed up in a couple of pages.'

### **5.3.6 Staff support in the implementation of change**

Most nurses interviewed felt that staff support was required in order to effectively implement change. Three themes recurred from the interviews suggesting that staff age tended to influence their support of change along with how recently they completed their training.

(01/15) 'We are considered the younger lot in that we want to go and try all these things, we want to research this and that because it's relevant to our place of employment, and then to try to implement it. When someone has been here for say 25-30 years and try to get them to change a habit of a lifetime is not very easy at all.'

(02/15) 'I think the younger the nurses tend to be and the more recently they've trained the more likely they are to accept research reports.'

### **5.3.7 Evaluating the quality of research**

Most nurses felt to some degree unsure about their capabilities when it came to evaluating the quality of a piece of research.

(12/15) 'I wouldn't know whether a piece of research was being done properly, I don't know which piece of research is right and which piece is wrong so which one do I use.'

A number of additional factors which restrict nurses from using research in practice were identified from the interview data. They represented recurrent threads which ran through the data relating to resources, for example money and time, the patient relating to the fact that all patients are individuals with individual needs, and the nurse, relating to her position which had the potential to restrict her from influencing change and her self reported lack of knowledge.

(02/28) 'Time is a big factor, it's one thing reading it and thinking, that's good but it's having the time to always put it into practice.'

(01/22) 'Money comes into it, how much time and how much money.'

(08/23) 'I'm newly qualified, I have no clinical recognition so cannot implement any changes.'

An interesting point was made here: whilst the nurse could draw on empirical knowledge from training she could not draw on extensive experiential knowledge and she therefore felt that her suggestions would not be acted upon.

### **5.3.8 Facilitators to using research in practice**

The postal survey (reported in Chapter Four) identified four facilitators to the use of research in practice. These facilitators were presented to interviewees in order to gain the views of non-responders' and to explore further respondents' feelings on these issues. Facilitators explored included suggestions made by nurses relating to:

- education
- accessibility of information
- facilitation
- involvement of the whole care team.

### **5.3.9 Education**

Most interviewees believed that the use of education was necessary in order to facilitate changes in practice, although they pointed out that time needed to be set aside for education to occur. It is widely accepted that education is one of the key areas which has the potential to link research and practice (Akinsanya, 1988; Closs and Cheater, 1994). Most interviewees considered that formal study days were the most efficient way of educating nurses and keeping them up to date. Some nurses recognised the importance of setting up research awareness groups on a local level, and the necessity for courses on gaining critical appraisal skills. The gap between education and practice was highlighted.

(09/18) 'You've got to allow for it (education) in the day, I do courses in my own time, no-one's paying me and it's time out of my life.'

(13/25) 'We need education on critiquing research and on clinical aspects...the thing about nursing today is there has to be ongoing education. Things are changing too quickly, we can't keep up with it on our own, that's why the academics must come into these areas. I know they pay lip service to it but they don't actually do it.'

Nurses interviewed expressed the commonly held view that nurse researchers need to take an active role in the dissemination of research findings.

### **5.3.10 Accessibility of information**

Whilst most interviewees recognised that making research information available would help to bring research into practice, they considered that a co-ordinator was required to make this possible.

(02/34) 'I think if you had some sort of co-ordinator who was given the time to go out and find the latest research in an area and facilitate it to other members of staff.'

(07/32) 'Someone needs to co-ordinate getting information together.'

Overall nurses wanted research information to be both interesting and understandable.

(11/30) 'Research has got to be interesting and understandable, that's really important. It's got to be very accessible to everyone's level so that everyone can get to grips with it and it's got to look interesting and be readable and be relevant to your work place.'

Some nurses recognised that even if research information was made more accessible, it still might not be read.

(05/38) 'I think it would be useful (available research information). It's a different matter whether nurses would read the information. It depends on the nurse and how keen she is.'

### **5.3.11 Facilitation**

Whilst some nurses felt that the facilitation of change would be useful in increasing interest in a subject and providing expertise, they were keen that a facilitator should be drawn from the existing team. The interviewees highlighted the fact that the introduction of a facilitator to change practice might not be well accepted and changes might not be maintained once the facilitator left the unit.

(10/32) 'I think that it's (facilitation) a good idea but I think there could be big problems with someone coming in and working alongside you. You'd have your negatives, probably thinking that you're there to check up on them.'



(02/35) 'I think it's (facilitation) more likely to be taken on board if it was someone who was already part of the team that was made the facilitator. If it was an outsider, people may think while the person was there 'Oh great', but after they had gone, you know, but if it was a member of the team I think it would be very effective.'

#### **5.3.12 Whole care team**

Most nurses felt that involvement of the whole care team was necessary in order to effectively bring research into practice. They highlighted the importance of communication and co-operation, which they felt was necessary if implementation of change was to be achieved. When nurses described the whole care team they commonly referred to the nursing team, from nursing care assistant to nurse manager, and when probed many did not see the role of the doctor as central. This could be because many of the interviewees were from community hospitals where erratic GP cover was provided.

(11/42) 'The nurses at all levels (need to be involved) but also everyone involved needs to know what's happening. Communication should be really strong. If everyone feels part of the team, everyone knows about what's going on. There are no doctors on site here so it's almost nurse led here. Nurses make most of the decisions, but they should be aware of what we're doing.'

#### **5.3.13 General facilitators in the use of continence research**

Nurses identified a number of factors which may facilitate the use of research in practice including the use of team meetings and discussion groups, update bulletins, updating and reinforcing; however the constraint of time remained prominent.

### 5.3.14 Critical Incidents

Critical incident technique can be defined as 'a method of obtaining data from study participants by in-depth exploration of specific incidents and behaviours related to the matter under investigation' (Polit and Hungler 1991). A full description of the critical incident technique is described in section 2.4.5. The information was obtained in the taped semi-structured interviews. The critical incident technique was used as a trigger for discussion of those specific incidents where individuals felt able to use research in practice and when individuals felt unable to use research in practice.

When interviewees were asked if they could give an example of their own use of research in practice, a number were unable to provide any examples. However some gave examples of when they felt able to use research evidence presented to them within a study day, and others from when they had read articles.

(01/34) 'Yes, with catheter care and male catheterisation, the continence adviser gave a good seminar and it explained a lot of things we didn't know and also about male catheterisation because we trusted her judgement.'

(11/48) 'With wound care, with a new product, using that rather than other things, I'd actually read research and it had said that it was better than using sachets of saline for infection control, so that was implemented, I think there's lots of things especially with wound care.'

When interviewees were asked if they could give an example of an instance when they felt unable to use research in practice most were able to give an example. They gave reasons relating to the patient, aspects of the nurse, problems with resources and issues relating to research itself.

(08/35) '(I can't put research into practice) the information is all there but I can't put it into practice because of my dogsbody status.'

(10/42) 'Some of the dressings, you'd like to use a certain product because there's research on it but you can't have it because of the budget.'

(13/44) 'I needed to change the mattresses here. I had lots of journal articles. The more I read the more confused I became, I really didn't know and the research seemed to be biased.'

At the end of the interview each interviewee was asked whether they would be interested in working as a pilot ward to increase the use of continence research in practice. The overall response from every site was 'Yes', however some nurses were very enthusiastic whilst others had reservations.

## 5.4 Summary

This chapter has presented the results of content analysis of transcripts of semi-structured interviews with nurses involved in elderly care. Four themes emerged which are believed to affect the use of research in practice and these were: *the patient, the nurse, research and resources*.

The following recommendations for a strategy to aid the implementation of continence research in clinical practice can be made from the evidence gathered.

- 1. Education:** provision of regular education updates on continence care to ALL staff in the form of study afternoons local to the clinical setting. Provision of critical appraisal skills workshops, to enhance research awareness and critical reading skills.
- 2. Accessibility of Information:** consolidated user-friendly information on continence care should be made available to all staff, along with regular up-to-date bulletins of relevant published work relating to the care of incontinent patients.
- 3. Facilitation:** both research staff and a clinical specialist should be available to advise and encourage the use of research in practice.

**4. Relevance to patient care:** all attempts to bring research into practice should have the primary objective of improving patient care.

The following chapters describe the implementation of two separate interventions with the aim of aiding the use of continence research in clinical practice. The first intervention was the development and use of a clinical handbook and the second intervention employed case study methodology within a single community hospital. The case study involved the total population of staff at the hospital and patient outcomes were measured in in-depth studies of four separate patients.

## **Chapter Six: Evaluation of a clinical handbook for continence care**

## **6.1 Introduction**

This project is concerned with methods of disseminating research evidence on incontinence to nurses, identifying barriers to dissemination and utilisation of such evidence and developing methods to overcome them. The study interventions presented in the following chapters were undertaken on the basis of information gathered from nurses reported in the two previous studies.

This chapter describes a study which was undertaken to determine the effect of a clinical handbook for continence care which comprised “decanted” research evidence presented in a user friendly format to nurses involved in care of the elderly units. The chapter begins with a short summary, before describing the methodology, the research aims, design adopted, population and sample, methods of data collection, the intervention and organisation of the study. Also included in the methodology section is a report of the pilot study; issues of reliability and validity are addressed and data management and analysis are reported. The results are presented before a short discussion section, the discussion points identified in this chapter are further explored in Chapter Eight along with the discussion points highlighted in the other studies.

## **6.2 Methods**

### **6.2.1 Objectives**

There were two major research objectives:

1. to assess the acceptability of a clinical handbook for continence care which supplied consolidated research evidence to practitioners
2. to evaluate the dissemination of research evidence for continence care using an experimental and control group in relation to nurses’ knowledge of urinary incontinence.

The following research hypotheses were posed:

- The Clinical Handbook for Continence Care (CHFCC) is an acceptable method of clinical updating for practising nurses.
- The CHFCC improves nurses’ knowledge of incontinence.

### 6.2.2 Research design

The project used a static group comparison design (Design 3, Campbell and Stanley, 1966), involving a pre-test, post-test approach (See Figure 6.1). The study involved two groups of nurses, the experimental group who received the intervention, which comprised the Clinical Handbook for Continence Care (Roe and Williams, 1994) and the control group who did not receive the intervention. Allocation to the experimental or control group was not randomised, the control only functioned as a quasi-control. It would have been inappropriate to randomize the sample as having nurses on the same ward/unit in the experimental group and control groups may have jeopardized the study by contaminating the sample. The possibility of randomising by unit was considered, however, although the units were geographically separate, the community hospitals formed part of a network which encouraged regular contact and support on relevant issues, this regular contact may itself have led to contamination of the sample. To overcome these difficulties a single DGH site which had a lecturer practitioner in post with a keen research interest, became the designated control site. The lecturer practitioner agreed that her unit could be the control site and that her staff would receive the intervention after an eight week period, other unit managers had suggested that this would be unacceptable to them.

**Figure 6.1. Research Design.**

Research Design	Static Group Comparison			
	O	X	O	
	-----			
	O		O	
		Group 1	Group 2	
pre-test		0 weeks O	O	
intervention			X	
post-test		7 weeks O	O	
follow up		6 months O	O	
	O = (pre-test and post-test) observation			
	X = intervention			
	Campbell and Stanley (1966)			

Nurses were not blind to the study, which meant that the nurses within both groups knew that they were either acting as a control or participating in the intervention. The nature of the intervention was such that 'blinding' would not have been feasible.

### **6.2.3 Population and sample**

The project was undertaken in a Health Authority (HA2) during 1993-1994 and included 15 sites, which comprised 10 community hospitals involved in care of the elderly, three elderly care units at general hospitals and one rehabilitation unit. Health Authority Two was located in a county in England comprising a moderately sized city, a number of market towns as well as semi-rural communities. The integrated care of the elderly and medical unit of a general hospital largely involved with the care of elderly patients provided the control. Each of the community hospitals had between 8 and 28 beds, the smallest general hospital had 40 elderly care beds and the largest 80.

The sample of qualified nurses (n=433) was taken from those areas involved in care of the elderly because of the high prevalence of incontinence in these areas and the large amount of time nurses spend in the promotion and management of continence. The potential population for this study comprised all qualified nurses working within these units. This study offered an educational opportunity for all nurses, therefore it was considered important to include the total population of qualified nurses in the sample. The studies reported in Chapters Four, Five and Seven were undertaken in a different HA (HA1) to the one reported in this Chapter, however the communities in which the HA's were located were broadly similar. Two geographical locations were used because the funders requested that the project be undertaken using more than one location. This was deemed necessary because Health Authority Two was a highly researched area where a great deal of practice development work was undertaken whereas HA1 identified in the other chapters had less experience of involvement in research studies.



A potential population of 433 qualified nurses were invited to participate in the project, 233 (54%) attended the first session when nurses were brought together in a group, the study was explained and they were asked to complete a knowledge questionnaire. One hundred and twenty-four (29%) went on to attend the second session, when a follow-up questionnaire was administered, and completed the study (Table 6.1).

As noted earlier, although this study was designed as pre-/post-test, a control site was also used. Table 6.1 shows the population and sample of nurses according to group allocation.

**Table 6.1 Population and sample of nurses according to allocation to experimental or control group.**

<b>Intervention Group</b>	<b>Potential Population</b>	<b>Relevant sample % Completed pre-test</b>	<b>Relevant sample % Completed post-test</b>
Experimental Group	314	204 (65%)	110 (35%)
Control Group	119	29 (24%)	14 (12%)
<b>TOTAL</b>	<b>433</b>	<b>233</b>	<b>124</b>

Table 6.1 shows that whilst response to the post-test was low it was consistently low in both the experimental and control groups.

#### **6.2.4 Methods of data collection**

The data collection procedures included in the project comprised a semi-structured questionnaire (see Appendix E) completed by nurses in pre- and post-test group sessions. The questionnaire was developed following pilot work and a critical review of the literature. Questionnaires were administered within a group in order to fully explain the project to participants and to enable them to consent to participation. An advantage of administering a questionnaire within a group rather than using a postal survey is that the response rate is usually higher (Polit and Hungler, 1991; Mulhall, 1998). In addition it provided an opportunity for group reflection at the post-test

allowing nurses to discuss how they managed patients who were incontinent and share successful and unsuccessful approaches for the promotion of continence.

Data collected by the questionnaire included biographical and professional details and reported nursing practice (see Appendix E). Biographical details included where the nurses worked, their grade, position and qualifications held. Data collected on nurses' knowledge included: definition of incontinence, number and type of U.K. sufferers, types of urinary incontinence, patient assessment, investigations, promotion of continence, drugs used in the management of urinary incontinence and aids and appliances for the management of urinary incontinence. Data were collected on whether nurses felt a medical diagnosis was necessary for a patient suffering from incontinence along with whether or not nurses felt that referral to other health care professionals was necessary. Data were also collected on the methods of teaching used by nurses when educating patients. Finally nurses were asked whether there were any constraints to their practice when caring for patients suffering from urinary incontinence.

At the post-test, additional data were collected in a handbook evaluation section. This section consisted of seven questions and asked nurses how useful they found the handbook, what they liked and disliked about it and whether they felt it offered a good approach to clinical updating as well as whether they had read any book or journal articles on the subject of incontinence since the pre-test.

### **6.2.5 The Intervention**

The procedure used in the delivery of the intervention comprised:

#### *The Clinical Handbook for Continence Care*

The Clinical Handbook for Continence Care was written for qualified nurses on the basis of the literature review in Chapter Three. This method of dissemination was chosen to provide nurses with a large amount of information in a small user-friendly package. There are a number of methods of dissemination which could have been adopted for use in this study. In addition to the use of printed materials, person to person contact or video or computer based initiatives could have been adopted.

However the use of printed materials is most widely documented in health care, it has the advantage of being familiar to nurses, offers ease of access and is relatively durable (Mulhall and Le May 1999). The use of clinical guidelines as a method of disseminating good practice is widely documented and it has been suggested that they can influence practice if developed, disseminated and implemented appropriately (Effective Health Care 1994). The choice of a clinical handbook format was deliberate, largely because in the group of staff that were being targeted, the notion of 'user-friendly' information was paramount. The use of a clinical handbook had been used in other clinical areas with positive outcomes (Roe and Luker 1992). At the time this study was undertaken U.K. clinical guidelines on incontinence were not available, had they been, amendment of the guidelines for use by the specific nurse group would have needed to be undertaken. The handbook was developed specifically for the group under investigation and therefore provided information most relevant to their practice.

This handbook was provided to the nurses in the experimental group following the collection of all pre-test data at a group meeting. Upon completion of the questionnaire nurses were each provided with a copy of the Clinical Handbook for Continence Care, for their own personal use. In addition, a more detailed book as a reference was provided for each ward involved in the study (Roe 1992, Clinical Nursing Practice, The Promotion and Management of Continence). This book was left for nurses' use on the ward. A chart was provided on the cover of this book, for nurses to date and tick whenever they used it for further reference.

#### *Group meetings*

A pre- and post-test group meeting was arranged at each site. The same researcher facilitated each group. The group meeting consisted of a brief background to the project, followed by 30 minutes in which nurses completed the questionnaire. Following completion of the questionnaire the contents and purpose of the handbook were discussed, and the remaining 20 minutes of the group meeting were used for group reflection on successful and unsuccessful approaches to the treatment and management of patients suffering from incontinence. The handbooks were left with the nurses, who were advised that a further group meeting would take place in seven

weeks, when their evaluation of the handbook would be obtained. A period of seven weeks was chosen to allow time for the nurses to read the handbook and to allow them the opportunity to refer to it within their work. This period of time was tested in the pilot study and seemed to be a suitable interval for optimum participation.

#### **6.2.6 Organisation of the study**

##### *Experimental Group*

Individual letters were sent to each qualified nurse working in the relevant sites inviting them to participate in the study and to attend discussion groups during a number of afternoons which had been arranged for each site. The times of the meetings varied according to each location and were organised at a mutually agreed time and date with the relevant senior nurse manager. Potential numbers of attendees at each site varied and ranged between six and 121 nurses. The number of sessions held at each site varied from one to five sessions, although usually two meetings were arranged allowing for days off, holiday and sickness, and thereby maximising the number of attendees. Where a site had a number of nurses who were on night duty, an evening discussion group was also arranged in consultation with the ward sisters in order to maximise the number of attendees. During the first ten minutes of each discussion group the study was explained and each nurse was then asked to complete a questionnaire taking around 30 minutes. Those individuals unable to attend any of the pre-test meetings were posted the questionnaire and asked to complete and return it via the internal post system within two weeks. Seven weeks later qualified nurses were invited by individual letters to attend a second meeting group. These meetings were arranged in the same way as the initial groups. Participants were asked for their general feedback on the handbook and to complete a post-test questionnaire. This questionnaire was the same as the original questionnaire but included an additional section on handbook evaluation, which asked what they particularly liked or disliked about the handbook, whether they felt its format could be used in other areas of care and whether or not they had read any books or journal articles on incontinence since the pre-test. Nurses who participated in both the pre- and post-test sessions, and who effectively completed full participation in the project then received a certificate of attendance for their portfolio.

### *Control Group*

Nurses in the control group underwent the same procedure as those in the experimental group, but at the pre-test meeting they were simply asked to complete the questionnaire following explanation of the project and of the fact that they were to act as a control group. All participants were told they would receive the handbook, a copy of the fuller reference book for the ward and a certificate of attendance after the second group meeting had been completed

### *Consent*

Each nurse who attended the meeting was asked if they were prepared to consent to take part in the project by completing the questionnaire. Every nurse who attended the session agreed to take part, although one left after five minutes at a meeting and said she did not wish to continue with her participation.

### **6.2.7 Pilot study**

The questionnaire and clinical handbook were developed and piloted at one site on a sample of convenience at one community hospital consisting of 24 qualified nurses. This was arranged through the lecturer-practitioner at the site. The questionnaires were completed by individual nurses and their comments and criticisms regarding its overall layout obtained. Their general reaction to the project was favorable. Before finalising the questionnaire for the main study their criticisms were taken into consideration and the appropriate changes made. These included minor changes to question wording and the re-ordering of some items to improve clarity. The pilot study was undertaken to test the acceptability of the questionnaire and to ensure face and content validity. Definitions, codes and instructions were developed following the pilot study for use throughout the project.

### **6.2.8 Reliability and validity**

Inter-rater reliability was tested by two researchers on a random sample of 10% of questionnaires (n=36). In particular the coding and scoring of data were tested. Agreement did not fall below 91% for the items checked. The questionnaire and data collection schedules were developed following a thorough review of the literature and critical appraisal from an expert advisory group. The expert advisory group

comprised expert clinicians, including continence advisors and researchers involved in the field of incontinence. Face validity and content validity seemed to be upheld, showing that issues highlighted in the literature review were comprehensively covered in the questionnaire used in the study.

### **6.2.9 Data management and analysis**

A coding schedule for the questionnaire was devised on the basis of a critical review of the literature and the Clinical Handbook for Continence Care. Each question had a box for the total number of appropriate responses, the total number of inappropriate responses and the overall total of responses. The coded data were then entered on to SPSS-pc (version 4.0) for statistical analysis. Descriptive statistics were reported for demographic details of the study sample. Inferential statistical analyses were conducted to compare the experimental and control groups. Association between the responses of nurses in experimental and control groups were tested using the Chi-squared test for association. The data are presented in two ways: firstly, analysis was undertaken using total knowledge scores, exploring differences pre- and post-test for total knowledge scores. This section begins with a comparison of those individuals who took part in the pre-test only and those who took part in both the pre- and post-test. In the second section differences between pre- and post-test responses of individual nurses were tested using the McNemar change test. To investigate this the null hypothesis was:

*among those nurses who change their answer, the probability that a nurse will change their response from a 'yes' to 'no' will be the same as the probability that a nurse will change their response from a 'no' to a 'yes'.*

Or, alternatively the above does not hold.

Associations between nurses' grade or job title and their performance were also tested using the Chi-squared test of association. Significance was set at the 5% level.

The differences between individuals' pre-test and post-test responses were investigated using the McNemar change test on the 124 respondents who completed both the pre- and post-test. McNemar test statistics could only be calculated for those variables which were dichotomous. Due to the low numbers in the control group, all

statistics generated from the McNemar test for the control group were compared with a 2-tailed Binomial distribution.

## **6.3 Results**

### **6.3.1 Introduction**

The aim of the research was primarily to assess the effect of the Clinical Handbook for Continence Care on nurses' knowledge. In particular, interest was focused on assessing the differences between responses of nurses in the experimental and control groups and differences between the pre- and the post-test responses of individual nurses.

The results are presented in four main sections:

1. Baseline comparison of respondents including biographical and professional details and knowledge of respondents who complete the pre-test only, and those who complete the pre- and post-test.
2. Comparison of pre- and post-test total scores
3. Pre- and post-test comparison of individual questions
4. Evaluation of the handbook

Where there is missing data, this is reported as a footnote to each table. Significance at the five percent level has been reported. Throughout the text, p values are included. For all two-by-two Chi-squared tables the p values are reported with the continuity correction.

### **6.3.2 Population and Sample**

In this section, the population and sample are presented, followed by demographic and professional details about the characteristics of the sample.

Two questions have been addressed and have focused on respondents' job title, grade and qualifications:

1. Are there any differences in the characteristics of respondents in the experimental and control groups?

2. Do the characteristics of the pre-test only respondents differ from those of the pre- and the post-test respondents?

These questions are asked of the data in the following section in relation to respondents job title, grade and qualifications.

Two hundred and thirty three respondents took part in the pre-test, of whom 124 went on to complete the post-test; therefore 109 respondents completed the pre-test only. Descriptive statistical analysis was undertaken to determine whether respondents who completed the pre-test only differed from those respondents who completed both the pre-test and the post-test. No statistical difference was found and therefore data from those respondents who took part in the pre-test only have been excluded, as a requirement of the project was for respondents to be involved in both the pre- and post-test.

### **6.3.3 Comparison of biographical and professional details of respondents who completed the pre-test only with those who completed both the pre-and post-test.**

Since only 50% of the nurses who attended the pre-intervention returned for the post-intervention session the pre-test results of those who returned and those who dropped out were examined in order to assess whether those who completed the project were in any way different, biographically or professionally, or whether drop out of the study might be linked with their success at the initial assessment. This was important as it would affect the generalisability of the results. Table 6.2 shows the professional and biographical details of pre- and post-test responders and pre-test only responders according to grade, qualification, hospital base and allocation to the experimental or control group.



**Table 6.2 Baseline comparison of those that drop out after pre-test and those that return.**

Variable	Drop out (%)	Return (%)
Grade D and below	40 (35%)	27 (23%)
E	41 (35%)	47 (40%)
F	23 (20%)	30 (26%)
G and above	12 (10%)	13 (11%)
Hospital DGH	66 (57%)	49 (42%)
CH	50 (43%)	68 (58%)
RGN qualified No	27 (23%)	19 (16%)
RGN qualified Yes	89 (77%)	98 (84%)
Group Control	14 (12%)	15 (13%)
Experimental	102 (88%)	102 (87%)

A Chi-square test was used to assess whether there was evidence of an association between each variable and the drop-out rate. There was no significant difference between the grade of pre- and post-test responders and pre-test only responders ( $\chi^2(3)=3.89$ ,  $p=0.27$ ) (Table 6.2), or between those responders who were RGN qualified and those who were not ( $\chi^2(1)=1.82$ ,  $p=0.18$ ). However significantly more responders at district general hospitals dropped out of the study after pre-test than from community hospitals ( $\chi^2(1)=5.25$ ,  $p=0.02$ ). There was no significant difference between the number of responders in the experimental group who dropped out of the study after the pre-test and those in the control group ( $\chi^2(1)=0.03$ ,  $p=0.86$ ).

#### **6.3.4 Comparison of baseline knowledge score from respondents who took part in the pre-test only and those who took part in both the pre- and post-test.**

Throughout the results section the urinary knowledge score will be referred to as UKS, the scoring system for the questionnaire gave one for every correct response, with a total possible UKS of 57.

It was necessary to check whether the knowledge score of those who completed the study was similar to that of those who dropped out - since, if drop out is associated

with initial knowledge score, this would restrict the generality of the results. Figure 6.2 shows a box plot<sup>2</sup> of the knowledge score for questions relating to urinary incontinence at the pre-test for those who undertook the pre-test only with those who undertook both the pre- and post-test. From the box plot we see that there are no substantial differences between the distribution of scores of those who only did the pre-test and those who completed the pre-and post-test. The median (central value) and spread of values is very similar for the two groups. For both groups the box plots are roughly symmetrical so the assumption of normality, needed for doing t-tests, is plausible. The t-test showed no significant difference in mean UKS between the two groups ( $t=-0.37$ ,  $df=231$ ,  $p=0.7$ ).

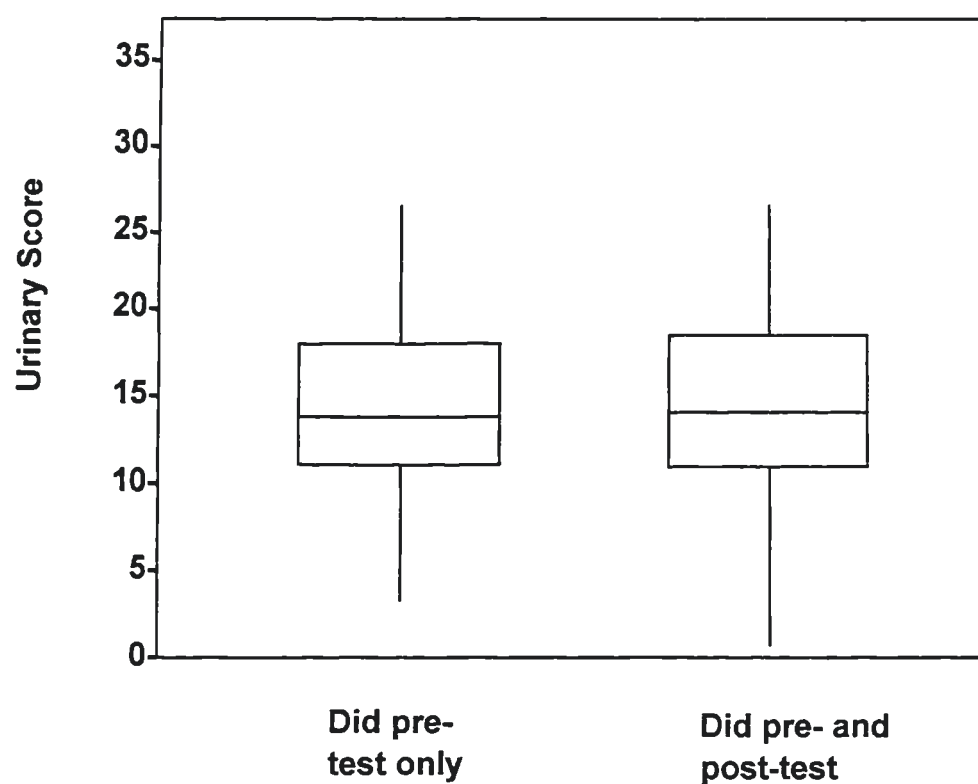
There were minimal baseline differences between pre- and post-test responders and pre-test only responders both in terms of demographic variables and in terms of knowledge score on questions relating to urinary incontinence. Thus, we could assume that those who completed the study were a representative sample of those who started the study.

A potential population of 433 qualified nurses were invited to participate in the project; 233 (54%) took part in the pre-test, of whom 124 (29%) went on to complete the post-test, thus completing the study. The post-test respondents comprised 53% of those who participated in the pre-test.

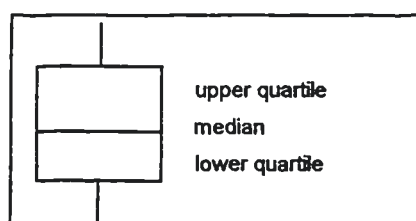
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<sup>2</sup> A boxplot is a diagram summarising the distribution by five values; the maximum value, the minimum value, the median, the lower quartile and the upper quartile. To calculate the median and the two quartiles the data was arranged in value order from smallest to largest. The value one quarter of the way through the size ordered list, from the lowest value, is the lower quartile. The value half way through the size ordered list is the median, and the value three quarters of the way through is the upper quartile. In the boxplot, the lower and upper quartiles are indicated as a box. The maximum and minimum values of the variable under consideration are indicated by the extremities (the 'whiskers') of the diagram. (Altman 1991, p33).

**Figure 6.2 Pre-test urinary score**



**Key: Description of a box-plot**



A box-plot of the knowledge score for questions relating to urinary incontinence at the pre-test, for those who undertook the pre-test only with those who undertook both the pre- and post- test

### **6.3.5 Baseline comparison of respondents**

As those who took part in the pre-test only and those who took part in both the pre- and post-test appear to be similar initially. All 233 nurses were included in the baseline analysis to investigate factors assessing pre-test knowledge score.

### **6.3.6 Experimental and control group respondents**

At the pre-test the mean UKS for the 29 nurses in the control group was 14.4 (standard deviation (s.d.) 5.1). The pre-test mean UKS for the 204 nurses in the experimental group was 14.6 (s.d. 5.2). There is no significant difference (using t-test for 2 independent groups between the mean UKS of the control and experimental groups at the pre-test stage.

### **6.3.7 Effect of grade on baseline score**

Figure 6.3 shows the baseline mean UKS for all 233 nurses by grade. All grades had similar scores except grade D and below where the mean UKS score was significantly lower. The mean UKS for each grade were as follows: G and above, 16.00; F, 15.89; E, 15.14; D grade and below, 12.39. An analysis of variance confirms that there is a significant difference ( $F=6.59; df=3,229; p=,0.001$ ) between the mean UKS for the grades. This difference would appear to be almost entirely due to grade, D being lower than grades G, F and E.

### **6.3.8 Effect of RGN qualification on baseline knowledge score**

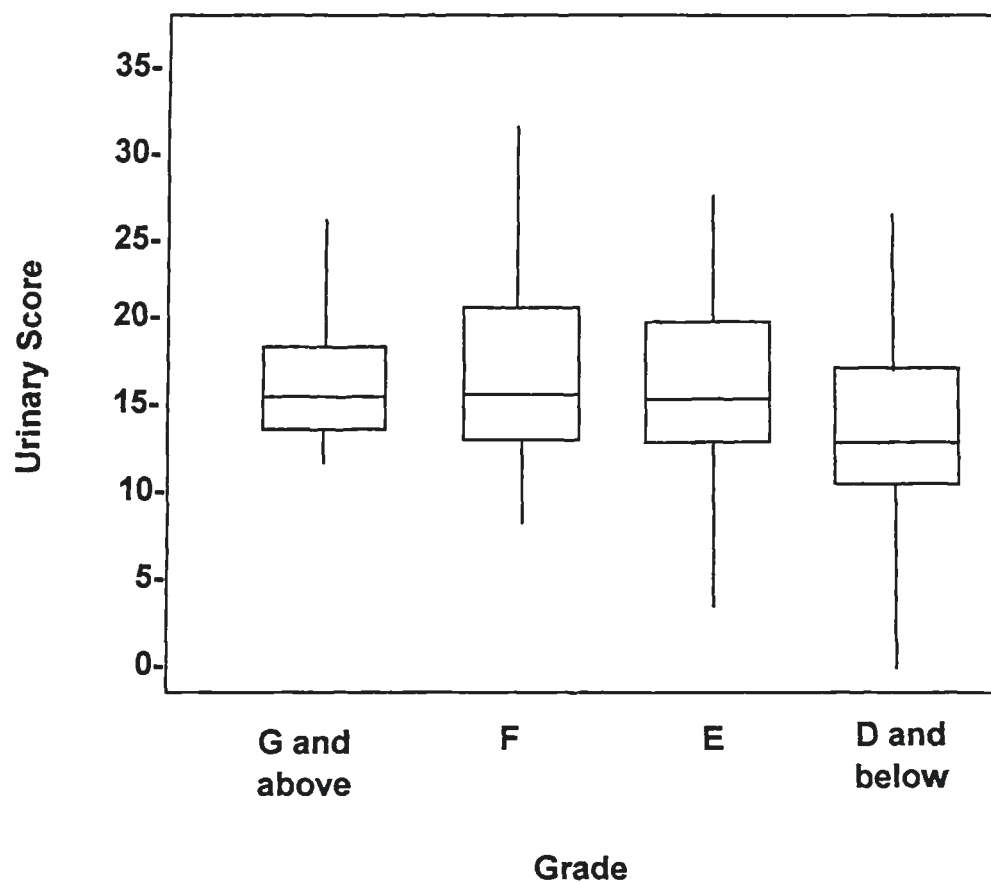
The total 233 respondents at the pre-test those who were RGN qualified had a mean UKS of 15.4 whilst the non-RGN qualified staff had a mean UKS of 11.20 this is significantly different ( $t=-6.07, df=83.44, p=<0.01$ ).

### **6.3.9 Effect of hospital type on baseline knowledge score**

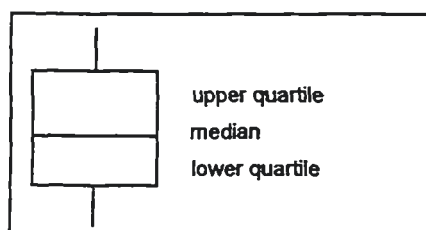
For the district general hospitals the mean UKS was 13.94 whilst for the nurses in community hospitals the mean UKS was 15.26. This difference was bordering on significance ( $p=0.05$ ).

It is of interest to determine whether there were differences in the grade structure of the two types of hospital since this might explain why mean UKS are different in the district general hospitals and community hospitals. A Chi-squared test was used to determine whether there was an association between grade and hospital type. The grade distribution in the two hospital types is shown in table 6.3. The Chi-squared test

**Figure 6.3 Pre-test urinary score by grade**



**Key: Description of a box-plot**



A box-plot of the knowledge score of respondents according to nursing grade at the pre-test

demonstrates a significant association between grade and hospital type ( $\chi^2(3)=38.99$   $p<0.01$ ) with the majority of D grade nurses and below working at District General Hospitals.

**Table 6.3 Baseline comparison of grade and hospital type.**

Grade	District General Hospital	Community Hospital
G grade and above	8	17
F grade	24	29
E grade	29	59
D grade and below	54	13

In addition, association between grade and RGN qualification was significant ( $p<0.01$ ). Those nurses with an RGN qualification were most likely to be employed at grade E and above. The majority of non RGN nurses were employed at district general hospitals. There was a significant association between RGN qualification and hospital type ( $p<0.01$ ). Of those respondents who did not hold an RGN qualification they were employed at grade D or C at district general hospitals. But in community hospitals about 40% were graded above D.

Differences were noted between UKS in DGH's and community hospitals. DGH's tend to employ lower grade staff than community hospitals. As the control group was drawn from a DGH, it was possible that the control group would have a lower UKS than the experimental group. However, this was not found to be the case. The control group had a UKS of 14.4 and the experimental group, a UKS of 14.6.

#### **6.3.10 RGN qualified staff only**

When RGN qualified nurses were considered, there remained a significant association between grade and hospital type ( $p<0.01$ ). However, there were no significant differences between RGN qualified staff in the district general hospitals and those in community hospitals (UKS were 15.16 and 15.69 respectively ( $p<0.01$ )). When RGN qualified staff only were considered the mean UKS for the different grades were: G and above, 16.13; F, 15.89; E, 15.31; D and below 14.41. Although D grade nurses had a marginally lower mean score, this was not significantly different from other grades. For RGN qualified staff it was accepted that the average knowledge score was

the same for all grades. The effect of grade may be a result of qualification i.e. differences in score due to grade may actually be a result of qualifications held by those at different grades. In the same way the differences in score between those who work at different hospitals may also be a result of qualifications held by nurses at those hospitals. Differences in scores according to hospital may occur only because the proportion of RGN qualified staff is different in the district general hospitals and community hospitals. It would appear that the most important characteristic is qualification in its effect on UKS.

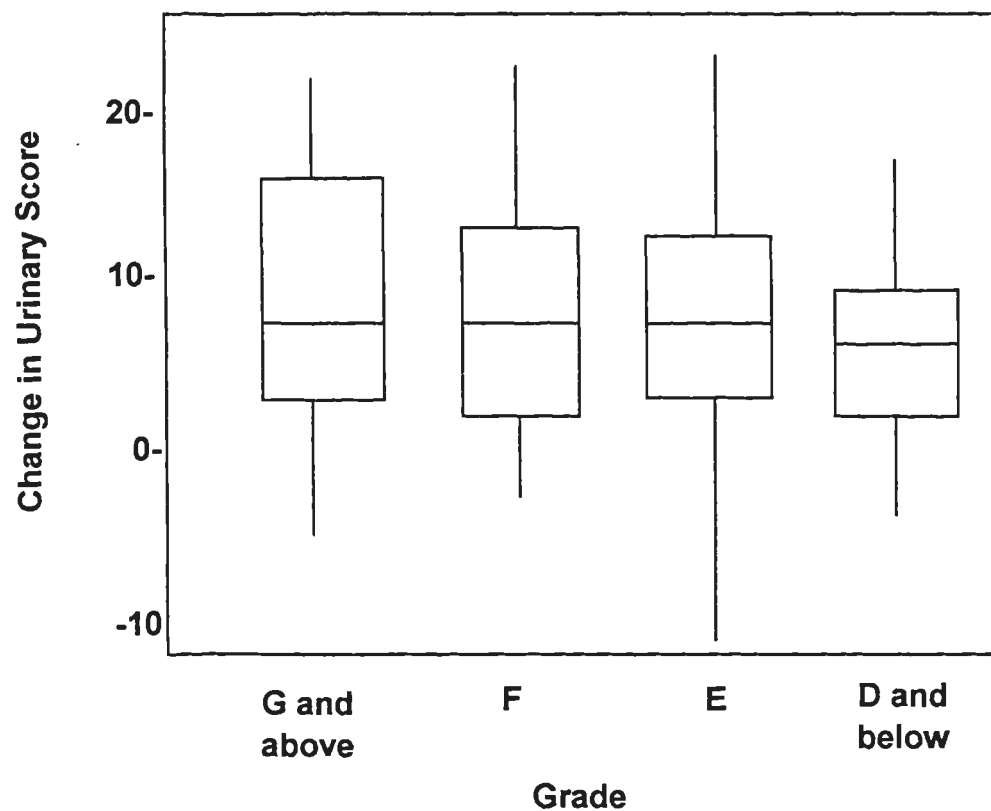
### **6.3.11 Comparison of pre-test and post-test total scores**

A paired t-test was used to compare the UKS pre- and post-test scores of the control group. There was no significant change in the mean UKS for the control group ( $t=1.18$   $df=14$   $p=0.258$ ). The mean change in UKS for the control group was 1.40 (95% CI -1.145-3.945). There was a significant improvement in UKS ( $t=10.30$   $df=101$ ,  $p<0.01$ ) for the experimental group. The mean change in UKS for the experimental group was 7.03 (95% CI 5.675-8.384). The handbook was therefore effective in improving knowledge on urinary incontinence.

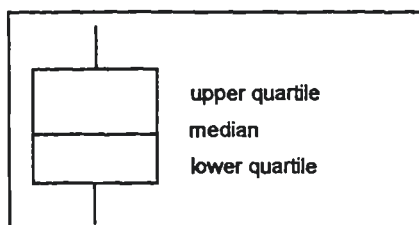
### **6.3.12 Incontinence score according to grade**

Figure 6.4 shows the improvement in UKS on questions relating to urinary incontinence at the post-test according to grade for the 102 respondents in the intervention group. The mean improvement in UKS at post-test according to grade was: G or above, 8.55; F, 7.42; E, 6.95; D or below, 6.00. The mean change in UKS score was not significantly different between the grades ( $p=0.774$ ). The pre-test mean UKS was significantly worse for individuals who were not RGNs, this group comprised Enrolled Nurses (ENs), they scored 11.60 whilst RGN responders scored 15.49. However, by the post-test there was no significant difference between those with and without an RGN qualification. On average both groups improved significantly, RGN qualified improved to a mean UKS of 22.41 whilst those without an RGN qualification improved to 19.05, giving an improvement of 7.45 amongst non-RGNs and 6.93 amongst RGNs. This indicates that the clinical handbook for continence care was accessible to non-RGN qualified staff, who actually improved

**Figure 6.4 Change in score for experimental group**



**Key: Description of a box-plot**



A box-plot showing the improvement in urinary knowledge score at the post-test according to grade for the 102 respondents in the intervention group



more between pre- and post-test, though not significantly more, than the RGN qualified staff.

Pre- and post-test response to selected individual questions in the experimental and control groups are described in the next section. The following section reports differences between pre- and post-test in the experimental and control groups.

### **6.3.13 Pre- and post-test comparison of individual questions**

In this section reported nursing practice in relation to continence care is presented. Two questions have been addressed:

1. Are there differences between responses from respondents' in the experimental and control group?
2. Are there any differences between individual respondents pre- and post-test responses?

Descriptive statistical analysis was undertaken to address these questions. Question one was investigated using the Chi-squared test of association and question two was investigated using the McNemar test statistic. Significance has been reported at the five percent level. Throughout this section all p values are included.

#### *Definition of incontinence*

Five criteria were developed to score respondents responses from the modified International Continence Society definition used by this project, which defined incontinence as:

The involuntary loss of urine (*or faeces*) which is objectively demonstrable and a social or hygienic problem. (modified definition Anderson *et al.*, 1988)

The five criteria were:

1. Involuntary loss
2. Urine
3. Faeces
4. Objectively demonstrable
5. Social or hygienic problem

When comparing the criteria included in the definition of incontinence at the pre- and post-test there were no significant differences between the responses from the experimental and control groups. By the post-test, the criteria included by each group had improved, however there remained no significant differences between the responses from the two groups.

**Table 6.4. Total number of responses at the pre-test to the question: *how would you define incontinence?* According to group.**

Group	Number of responses at the pre-test				
	0	1	2	3+	Total
Experimental	96 (47%)	50 (24%)	46 (22%)	12 (6%)	204
Control	12 (41%)	10 (34%)	7 (24%)	0	29
Total	108	60	53	12	233

**Table 6.5 Total number of responses at the post-test to the question: *how would you define incontinence?* According to group.**

Group	Number of responses at the post-test					
	0	1	2	3	4+	Total
Experimental	32 (29%)	28 (25%)	23 (21%)	19 (17%)	8 (7%)	110
Control	4 (28%)	5 (36%)	3 (21%)	2 (14%)	0	14
Total	36	33	26	21	8	124

Of the five listed criteria at the pre-test 12 (6%) respondents from the experimental group included three or more correct responses whilst no respondents from the control group gave more than two correct responses (Table 6.4). At pre-test 39 (19%) respondents from the experimental group and four (14%) respondents from the control group included *involuntary loss* in their definition. By post-test 37 (34%) respondents from the experimental group and four (28%) respondents from the control group included *involuntary loss* in their definition. At pre-test 102 (50%) respondents in the experimental group included *urine* in their definition, and 16 (55%) respondents in the control group. By post-test 72 (65%) respondents included *urine* in their definition from the experimental group and 11 (78%) from the control group. *Faeces* was included in the pre-test definition by 32 (16%) respondents in the experimental group and five (17%) respondents in the control group. By post-test 30

(27%) respondents in the experimental group included *faeces* in their definition and three (21%) respondents in the control group. At pre-test, no respondents in the experimental or control group included *objectively demonstrable* in their definition, by post-test four (4%) respondents in the experimental group included *objectively demonstrable*, but none in the control group. Only seven (3%) respondents included *social or hygienic problem* in their pre-test definition from the experimental group and one (3%) from the control group. By post-test 21 (19%) respondents in the experimental group and two (14%) in the control group included this response. Overall at the pre-test when defining incontinence the experimental and control group performed in a similar manner, by post-test both groups had improved independently.

#### *Pre-test post-test comparison for definition of incontinence*

When respondents pre- and post-test responses to the question *how would you define incontinence?* were compared between the experimental and control group, 19 (17%) respondents in the pre-test experimental group included *involuntary loss* in their definition of incontinence. By the post-test 37 (34%) respondents in the experimental group included *involuntary loss*, the number of respondents including *involuntary loss* in their definition had almost doubled, this shift was statistically significant ( $\chi^2(1)=30.53$ ,  $p<0.01$ ) (Appendix H). Within the control group at the pre-test no respondents reported *involuntary loss* in their definition, by the post-test four (29%) respondents had included *involuntary loss* as part of their definition of incontinence, this was also statistically significant ( $p<0.01$ ) (Appendix I).

In the experimental group at the pre-test 53 (48%) respondents reported *urine* in their definition of incontinence, by the post-test 72 (65%) respondents reported *urine* in their definition, although the increase from the pre-test to the post-test was notable, it was not significant (Appendix J). In the control group at the pre-test nine (64%) respondents reported *urine* in their definition and 12 (86%) by the post-test, this increase was not statistically significant (Appendix J). Nineteen respondents (17%) in the experimental group reported *faeces* in their definition of incontinence at the pre-test, by the post-test 30 (27%) respondents reported *faeces*, this increase was statistically significant ( $\chi^2(1)=36.36$ ,  $p<0.01$ ) (Appendix J). Within the control

group at the pre-test, three (21%) respondents reported *faeces* in their definition, by the post-test this number had not changed, only three respondents reported *faeces* at the post-test.

At the pre-test, within the experimental group, no respondents reported *objectively demonstrable* in their definition, by the post-test four (4%) respondents reported this factor, this increase was statistically significant ( $\chi^2(1)=104.00$ ,  $p<0.01$ ) (Appendix J). Within the control group no respondents reported *objectively demonstrable* at either the pre-test or the post-test (Appendix I). At the pre-test three (3%) respondents in the experimental group reported *social or hygienic problem* in their definition, at the post-test 21 (19%) respondents reported this factor, this increase was statistically significant ( $\chi^2(1)=78.53$ ,  $p<0.01$ ) (Appendix J). In the control group, at the pre-test no respondents reported *social or hygienic problem* in their definition. At the post-test, two (14%) respondents reported this factor, this increase was statistically significant ( $p<0.01$ ) (Appendix I). Within the question, How would you define incontinence?, there were significant improvements between four of the five criteria in both the experimental and control group. More respondents in the experimental group improved than in the control group.

#### *Prevalence of incontinence*

The prevalence of incontinence in the UK population is estimated at approximately *three million* people (Smith 1982). Respondents were asked to give an approximation of the number of sufferers of urinary incontinence within the United Kingdom and estimations between two and four million were accepted.

**Table 6.6 Total number of correct responses at pre- and post-test to the question ‘Approximately how many people suffer from urinary incontinence in the UK?’ according to group. (Appendix F and G)**

Group	Number of correct responses	
	Pre-test	Post-test
Experimental	15 (7%)	51 (46%)
Control	5 (17%)	2 (14%)
<b>TOTAL</b>	<b>20</b> 20 missing cases	<b>53</b> 6 missing cases

When respondents were asked to approximate the number of sufferers of urinary incontinence in the United Kingdom (Table 6.6). Fifteen respondents (7%) from the experimental group gave an appropriate response and five respondents (17%) from the control group, at the pre-test. By the post-test 51 respondents (46%) gave an appropriate response within the experimental group whilst only two respondents (14%) gave an appropriate response from the control group, this was statistically significant and a great improvement on the experimental pre-test response, ( $\chi^2(1)=4.70^3$ ,  $p<0.01$ ) (Appendix F, G). Whilst the experimental group response had improved, the control group response had actually deteriorated.

#### *Pre-test post-test comparison for prevalence of incontinence*

When respondents were asked to approximate the number of sufferers of incontinence in the United Kingdom, four (4%) respondents in the experimental group gave an approximation comparable with the literature. By the post-test 51 (46%) respondents in the experimental group provided this response. This increase was statistically significant ( $\chi^2(1)=40.42$ ,  $p<0.01$ ) (Appendix J). In the control group at the pre-test one (7%) respondent gave an approximation comparable with the literature, by the post-test two (14%) respondents had provided this response, this increase was statistically significant ( $p<0.01$ ) (Appendix J).

When respondents in the experimental group were asked who suffers from incontinence, 49 (44%) respondents recorded the appropriate response that 'anyone' could suffer from incontinence, by the post-test, this had increased to 54 (49%) respondents providing this response, this increase was not statistically significant. Within the control group seven (50%) respondents gave an appropriate response to this question at the pre-test, by the post-test response remained the same at seven respondents, with no improvement in response detected.

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<sup>3</sup>With Yates continuity correction

### *Types of urinary incontinence*

Five criteria (types) were developed to score the responses relating to the types of incontinence. These criteria were developed from a systematic review of the literature and the Clinical Handbook for Continence Care. The five types of incontinence included were:

1. Urge incontinence
2. Stress incontinence
3. Outflow obstruction
4. Neurogenic bladder
5. Nocturnal Enuresis

**Table 6.7** Total number of responses to the question. *What are the main types of urinary incontinence?* According to group

Group	Total number of responses					Total
	0	1	2	3	4+	
Experimental Pre-test	13 (6%)	76 (37%)	80 (39%)	27 (13%)	7 (3%)	203
Control Pre-test	3 (10%)	9 (31%)	11 (38%)	4 (14%)	2 (7%)	29
Experimental Post-test	2 (2%)	14 (13%)	27 (24%)	31 (28%)	36 (33%)	110
Control Post-test	0	9 (64%)	1 (7%)	4 (28%)	0	14

At the pre-test there were no significant differences between the responses from the experimental and control group when reporting types of urinary incontinence. At the pre-test 73 (36%) respondents within the experimental group and eight (27%) in the control group included *urge incontinence* as a type of urinary incontinence. By the post-test 82 (74%) respondents in the experimental group and three (21%) from the control group included *urge* as a type of incontinence, this was statistically significant ( $\chi^2(1)=17.05$   $p<0.01$ ) (Appendix F). One hundred and eighty six (92%) respondents in the experimental group and 25 (86%) in the control group at the pre-test included *stress incontinence* as a type of incontinence. At the post-test 105 (95%) respondents in the experimental group and 13 (93%) in the control group included *stress incontinence*. At the pre-test a higher percentage of respondents in the control group (8, 27%) included *outflow obstruction* as a type of incontinence than in the experimental group where 38 (19%) respondents included this type of incontinence. By the post-test 53 (48%) respondents in the experimental group and four (28%) respondents in the control group included *outflow obstruction* as a type of

incontinence. At the pre-test 21 (10%) respondents in the experimental group and four (14%) in the control group included *neurogenic bladder* as a type of incontinence. By the post-test significantly more respondents in the experimental group (56 (51%)), included *neurogenic bladder* as a type of incontinence compared with 2 respondents (14%) in the control group ( $\chi^2(1)=5.30^4$ ,  $p<0.01$ ) (Appendix G). At the pre-test 28 (14%) respondents in the experimental group and six (21%) in the control group included *nocturnal enuresis* as a type of incontinence. At the post-test nine (8%) respondents in the experimental group and one (7%) respondent in the control group included *nocturnal enuresis*. In both the experimental and control group the percentage of respondents including *nocturnal enuresis* as a response had decreased.

#### *Pre-test post-test comparison for types of urinary incontinence*

*Urge incontinence* was included as a type of incontinence by 35 (32%) respondents in the experimental group at the pre-test, by the post-test 83 (75%) respondents included *urge incontinence*, this was statistically significant ( $\chi^2(1)=79.22$ ,  $p<0.01$ ) (Appendix J). Within the control group, at the pre-test, three (21%) respondents included *urge incontinence*, the number of respondents who included this response had not changed by the post-test.

*Stress incontinence* was included as a type of incontinence by 94 (85%) respondents at the pre-test in the experimental group, by the post-test 105 (95%) respondents included *stress incontinence*, this increase was statistically significant ( $\chi^2(1)=78.22$ ,  $p<0.001$ ) (Appendix J). In the control group the number of respondents including *stress incontinence* as a type of incontinence improved from 13 (93%) respondents at the pre-test to 14 (100%) respondents at the post-test, this was not statistically significant (Appendix J).

*Outflow obstruction* was included by 17 (15%) respondents at the pre-test in the experimental group, and increased to 53 (48%) respondents by the post-test, this increase was statistically significant ( $\chi^2(1)=20.55$ ,  $p<0.001$ ) (Appendix J). In the

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<sup>4</sup>With Yates continuity correction

control group at the pre-test three (21%) respondents included *outflow obstruction* as a type of incontinence and four (28%) by the post-test, this increase was not statistically significant (Appendix J).

Thirteen (12%) respondents in the experimental group at the pre-test included *neurogenic bladder* as a type of urinary incontinence, by the post-test, 56 (51%) respondents included *neurogenic bladder*. This increase from the pre-test to the post-test was statistically significant ( $\chi^2(1)=23.88$ ,  $p<0.01$ ) (Appendix J). In the control group, two (14%) respondents included *neurogenic bladder* at the pre-test, this had not changed by the post-test.

Eleven (10%) respondents in the experimental group included *nocturnal enuresis* as a type of urinary incontinence at the pre-test, however, by the post-test the number of respondents who included *nocturnal enuresis* had decreased to nine (8%) respondents. Similarly, in the control group, three (21%) respondents included *nocturnal enuresis* at the pre-test but only two (14%) included this type of incontinence at the post-test.

#### *Factors which may cause urinary incontinence*

Respondents were asked to identify factors which may cause urinary incontinence, five criteria were selected to score the responses. These criteria were developed from a systematic review of the literature and the Clinical Handbook for Continence Care. The five criteria for inclusion as causative factors of urinary incontinence were:

1. Urinary Tract Infection (UTI)
2. Faecal Impaction/constipation
3. Drug therapy (including alcohol)
4. Endocrine disorders/diabetes
5. Age related factors

Urinary tract infection (UTI) was included as a factor which may cause urinary incontinence by 129 (63%) respondents in the experimental group at the pre-test and 18 (62%) respondents in the control group, by the post-test 72 (65%) respondents in the experimental group and 12 (86%) in the control group included UTI as a factor



which may cause urinary incontinence. Faecal impaction was included by 47 (23%) respondents in the experimental group at the pre-test and 7 (24%) respondents in the control group, by the post-test 49 (44%) respondents in the experimental group included faecal impaction and 6 (43%) respondents in the control group.

**Table 6.8 Factors reported as causing urinary incontinence at the pre- and the post-test according to experimental or control group (Appendix F and G)**

Identified factors	Number of respondents reporting factors at pre- and post-test			
	Experimental PRE-TEST	Control PRE-TEST	Experimental POST-TEST	Control POST-TEST
UTI	129 (63%)	18 (62%)	72 (65%)	12 (86%)
Faecal impaction	47 (23%)	7 (24%)	49 (44%)	6 (43%)
Drug therapy	54 (26%)	11 (38%)	48 (44%)	7 (50%)
Endocrine disorders	11 (5%)	1 (3%)	13 (12%)	2 (14%)
Age related changes	19 (9%)	1 (3%)	18 (16%)	1 (7%)
missing cases	n=204	n=29	n=110	n=14

Drug therapy was included as a factor which may cause urinary incontinence by 54 (26%) respondents in the experimental group at the pre-test and 11 (38%) respondents in the control group. By the post-test 48 (44%) respondents in the experimental group and seven (50%) in the control group included drug therapy. Few respondents included endocrine disorders at either the pre- and post-test, 11 (5%) respondents in the experimental group at the pre-test and one (3%) in the control group and at the post-test 13 (12%) in the experimental group and two (14%) in the control group. Age was included as a factor which may cause urinary incontinence by 19 (9%) respondents in the experimental group and one (3%) respondent in the control group at the pre-test. By the post-test 18 (16%) respondents in the experimental group and one (7%) in the control group included age as a factor which may cause urinary incontinence. For each factor identified there was improvement in both the experimental group and control group between the pre- and the post-test (Table 6.8), these improvements were not significant (Appendix F), the improvements in the experimental group were greater than in the control group in only one category.

### *Pre-test post-test comparison of factors that cause urinary incontinence*

At the pre-test 66 (60%) respondents in the experimental group included *UTI* as a factor that causes urinary incontinence, this response increased to 72 (65%) respondents by the post-test. This increase was statistically significant ( $\chi^2(1)=8.91$ ,  $p<.005$ ) (Appendix J). In the control group ten (71%) respondents reported *UTI* at the pre-test and 13 (93%) by the post-test, this shift was significant ( $p<.005$ ) (Appendix J). *Faecal impaction* was reported as a cause of urinary incontinence by 26 (24%) respondents in the experimental group at the pre-test and 49 (44%) respondents at the post-test, this shift was significant ( $\chi^2(1)=11.44$ ,  $p<0.01$ ) (Appendix J). Five (36%) respondents in the control group at the pre-test and six (43%) at the post-test reported *faecal impaction* as a cause of urinary incontinence, this small shift was not statistically significant.

*Drugs* were included as a factor which may lead to urinary incontinence by 22 (20%) respondents in the experimental group at the pre-test, increasing to 48 (44%) respondents by the post-test, this shift was significant ( $\chi^2(1)=16.00$ ,  $p<0.01$ ) (Appendix J). Within the control group six (43%) respondents reported *drugs* as a factor causing urinary incontinence at the pre-test increasing to seven (50%) respondents by the post-test, this increase was not statistically significant (Appendix J).

Six (5%) respondents in the experimental group included *endocrine disorders* as a factor which may cause urinary incontinence at the pre-test, this number had increased to 13 (12%) respondents by the post-test, this shift from the pre-test to the post-test was statistically significant ( $\chi^2(1)=75.69$ ,  $p<0.01$ ) (Appendix J). No respondents reported *endocrine disorders* within the control group at the pre-test and only two (14%) respondents gave this response at the post-test.

*Age* was reported as a factor which may cause urinary incontinence by eight (7%) respondents in the experimental group at the pre-test, by the post-test 18 (16%) respondents reported this factor, this shift was statistically significant ( $\chi^2(1)=65.98$ ,

$p < 0.01$ ) (Appendix J). Within the control group no respondents reported *age* as a factor causing urinary incontinence at the pre-test, but two (14%) respondents reported this factor by the post-test. Of the five criteria included the experimental group improved significantly for each factor, whilst in the control group significant improvement was only made in three of the five criteria.

#### *Factors affecting the ability to cope with the bladder*

Respondents were asked to identify factors affecting an individual's ability to cope with the bladder. Five criteria were developed to score the responses relating to these factors. These criteria were developed following a systematic review of the literature and the Clinical handbook for Continence Care. The five criteria selected for inclusion were:

1. Reduced mobility (poor dexterity, unsuitable clothing).
2. Mental State (e.g. dementia, unaware of need to empty bladder and location of toilet).
3. Psychological state (emotional breakdown, death of spouse, disorientation after entering an institution).
4. Environmental factors (bed and chair heights, proximity of mobility aids, call bell, location of toilet).

Responses from the experimental group and control group were very similar at the pre-test, showing no significant differences in performance between the experimental and control group. By the post-test, the experimental group had begun to perform slightly better, 52 respondents (47%) included that a person's *mental state* could affect their ability to cope with the bladder from the experimental group, whilst only five respondents (36%) included this factor within the control group. Again, a higher number of respondents from the experimental group 106 (96%) included that *environmental factors* may affect an individual's ability to cope with the bladder compared to only four (28%) respondents from the control group. Significantly more respondents in the experimental group included that *carers* were a factor which could affect an individual's ability to cope with the bladder, 28 (25%) respondents included

this factor whilst no respondents from the control group included it ( $\chi^2(1)=3.46^5$ ,  $p<0.01$ ) (Appendix G).

**Table 6.9 Factors affecting an individuals ability to cope with the bladder, according to group (Appendix H and I)**

Identified factors	Number of respondents reporting factors at pre- and post-test			
	Experimental PRE-TEST	Control PRE-TEST	Experimental POST-TEST	Control POST-TEST
Reduced mobility	60 (29%)	10 (34%)	65 (59%)	9 (64%)
Mental state	42 (21%)	6 (21%)	52 (47%)	5 (36%)
Psychological state	14 (7%)	1 (3%)	15 (14%)	3 (21%)
Environmental factors	39 (19%)	2 (7%)	55 (50%)	5 (36%)
Carers	4 (2%)	0	28 (25%)	1 (7%)
	<b>n=204</b>	<b>n=29</b>	<b>n=110</b>	<b>n=14</b>

*Pre-test post-test comparison of factors affecting an individuals ability to cope with the bladder*

Respondents were asked what factors may affect an individual's ability to cope with the bladder (Table 6.9), 60 (29%) respondents in the experimental group at the pre-test reported *mobility* as a factor, and at the post-test 65 (59%) respondents included this factor. Within the control group the number of respondents who reported *mobility* as a factor affecting an individuals ability to cope with the bladder declined from 10 (34%) respondents at the pre-test to nine (64%) respondents at the post-test. Within the experimental group 42 (21%) respondents reported *mental state* as a factor affecting the ability to cope with the bladder at the pre-test compared to 52 (47%) respondents at the post-test. In the control group, the number of respondents reporting *mental state* as a factor affecting an individuals ability to cope with the bladder declined from six (21%) respondents at the pre-test to five (36%) respondents at the post-test.

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<sup>5</sup>With Yates continuity correction

*Psychological state* was a factor reported by 14 (7%) respondents in the experimental group at the pre-test and 15 (14%) respondents at the post-test. In the control group the response improved from one (3%) respondent at the pre-test to three (21%) respondents at the post-test. The *Environment* was included as a factor affecting an individuals ability to cope with the bladder by 39 (19%) respondents in the experimental group at the pre-test and 55 (50%) respondents at the post-test. In the control group two (7%) respondents at the pre-test reported this factor and five (36%) at the post-test, this shift was significant ( $p < 0.05$ ) (Appendix J).

At the pre-test four (2%) respondents from the experimental group reported that *carers* could affect an individuals ability to cope with the bladder, by the post-test 28 (25%) respondents reported this factor. This shift was statistically significant ( $\chi^2(1) = 64.98$ ,  $p < 0.01$ ) (Appendix J). In the control group no respondents included *carers* in their response at the pre-test but one (7%) respondent included it at the post-test, this was statistically significant ( $p < 0.01$ ) (Appendix J). Of the five possible responses to this question, two of the responses had changed significantly from the pre-test to the post-test in the experimental group, however, three responses had changed significantly from the pre-test to the post-test in the control group.

#### *Assessment of urinary incontinence*

Respondents were asked how they would assess someone with urinary incontinence. Five criteria were selected to score the responses. These criteria were developed from a systematic review of the literature and the Clinical Handbook for Continence care. The five criteria selected for inclusion were:

1. Completed continence history or assessment form
2. Completed medical history
3. Completed social history (including mention of social situation including accommodation, proximity to toilet and affect on lifestyle).
4. Physical Examination
5. Completed frequency volume chart

At the pre-test, the response to the question "*How would you assess someone with urinary incontinence?*", was not significantly different between the experimental and control groups. At the post-test, whilst in each of the five possible responses, the experimental group performed slightly better than the control group, in only one of these cases was the response statistically significant. Significantly more respondents within the experimental group 42 (38%) included *medical history* as an important part of a continence assessment, compared to only one (7%) respondent in the control group ( $\chi^2(1)= 4.26^6$ ,  $p = <0.05$ ) (Appendix G).

**Table 6.10 Assessment of individuals suffering from urinary incontinence factors included by respondents according to group (Appendix F and G)**

Factors identified	Numbers of respondents including factors at pre- and Post-test			
	Experimental PRE-TEST	Control PRE-TEST	Experimental POST-TEST	Control POST-TEST
Assessment Form	88 (43%)	15 (52%)	63 (57%)	6 (43%)
Medical History	36 (18%)	2 (7%)	42 (38%)	1 (7%)
Social History	19 (9%)	6 (21%)	28 (25%)	3 (21%)
Physical Exam	23 (11%)	1 (3%)	13 (12%)	0 (0%)
Frequency volume chart	86 (42%)	8 (27%)	62 (56%)	6 (43%)
10 missing cases	<b>n=204</b>	<b>n=29</b>	<b>n=110</b>	<b>n=14</b>

Within the control group between the pre- and the post-test, the percentage of respondents giving the assessment criteria of *assessment form*, *medical history*, *social history* and *physical examination* had either declined or remained the same with no deterioration or improvement. The assessment criteria of frequency volume chart had improved from eight (27%) respondents at the pre-test to six (43%) at the post-test. Within the experimental group, responses had improved for all assessment criteria including *medical history* which improved from 36 (18%) respondents at the pre-test to 42 (38%) at the post-test (see Table 6.10).

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<sup>6</sup>With Yates continuity correction

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*Pre-test post-test comparison for the assessment of individuals suffering from urinary incontinence*

When respondents were asked how they would assess an individual suffering from urinary incontinence, 49 (44%) respondents in the experimental group reported *continence history/assessment* as a form of assessment at the pre-test and 63 (57%) at the post-test (Appendix J). In the control group the number of respondents reporting *continence history/assessment* actually decreased from 11 (78%) respondents at the pre-test to seven (50%) respondents at the post-test. Twenty one (19%) respondents in the experimental group at the pre-test reported *medical history* as part of a continence assessment. The number reporting *medical history* had increased to 42 (38%) respondents by the post-test, this shift was statistically significant ( $\chi^2(1)=63.44$ ,  $p<0.01$ ) (Appendix J). Within the control group the number of respondents stating *medical history* in the assessment of incontinence had decreased from two (14%) respondents at the pre-test to one (7%) respondent at the post-test (Appendix I). Five (4%) respondents reported *social history* as part of an assessment of incontinence in the experimental group at the pre-test, by the post-test 28 (25%) respondents reported *social history*. This increase was statistically significant ( $\chi^2(1)=73.22$ ,  $p<0.01$ ) (Appendix J). In the control group there was no change between the pre-test and the post-test responses for these criteria (Appendix I).

Seven (6%) respondents reported physical examination as part of an assessment for incontinence in the experimental group at the pre-test, by the post-test 13 (12%) respondents reported *physical examination*. In the control group, only one (7%) respondent reported *physical examination* at pre-test, but no respondents reported this factor at the post-test (Appendix I).

In the experimental group 44 (40%) respondents reported completing a *frequency volume chart* formed part of a full continence assessment at the pre-test, by the post-test 62 (56%) respondents reported the use of a *frequency volume chart* as part of a full continence assessment, this shift was significant ( $\chi^2(1)=72.25$ ,  $p<0.01$ ) (Appendix J). In the control group three (21%) respondents reported the use of a

*frequency volume chart* at the pre-test and six (43%) at the post-test (Appendix J). Of the five assessment criteria, respondents from the experimental group improved significantly from the pre-test to the post-test on four assessment criteria, whilst the control group improved significantly from the pre-test to the post-test on three of the assessment criteria.

#### *Investigations for urinary incontinence*

Respondents were asked to identify what investigations may be indicated for individuals suffering from urinary incontinence, seven criteria were selected to score the responses. These criteria were developed from a systematic review of the literature and the Clinical Handbook for Continence Care. The seven criteria selected for inclusion were:

1. Frequency volume chart
2. Urinalysis
3. Mid Stream Specimen of Urine (MSU)
4. Physical examination
5. Pelvic floor assessment
6. Urodynamics
7. Cystoscopy

**Table 6.11 Investigations undertaken for individuals suffering from urinary incontinence identified by respondents according to group (Appendix F and G)**

Identified factors	Number of respondents identifying factors at pre- and post-test			
	Experimental PRE-TEST	Control PRE-TEST	Experimental POST-TEST	Control POST-TEST
Frequency Volume chart	14 (7%)	3 (10%)	13 (12%)	1 (7%)
Urinalysis	65 (32%)	11 (38%)	28 (25%)	4 (28%)
MSU	157 (77%)	22 (76%)	79 (72%)	10 (71%)
Physical examination	36 (18%)	9 (31%)	42 (38%)	7 (50%)
Pelvic floor assessment	16 (8%)	1 (3%)	22 (20%)	1 (7%)
Urodynamics	34 (17%)	6 (21%)	24 (22%)	3 (21%)
Cystoscopy	41 (20%)	12 (41%)	25 (23%)	3 (21%)
	<b>n=204</b>	<b>n=29</b>	<b>n=110</b>	<b>n=14</b>



Respondents were asked what investigations may be undertaken for patients suffering from urinary incontinence. At the pre-test significantly more respondents 12 (41%) in the control group included *cystoscopy* as an investigation for urinary incontinence compared to 41 (20%) respondents in the experimental group, ( $\chi^2(1) = 4.94^7$ ,  $p < 0.05$ ) (Appendix F).

Within the experimental group there were improvements between the pre- and post-test in five of the listed investigations: *frequency volume charts*, *physical examination*, *pelvic floor assessment* *urodynamics* and *cystoscopy*, however, the response declined slightly on two of the investigations *urinalysis* and *MSU*. Within the control group response to each investigation remained consistent or declined except in two cases, *physical examination* and *pelvic floor assessment* which improved (see Table 6.11).

#### *Pre-test post-test comparison of investigations for urinary incontinence*

Seven investigations useful in the diagnosis and assessment of urinary incontinence were identified for urinary incontinence, the experimental group improved significantly from the pre-test to the post-test when reporting each investigation. Seven (6%) respondents included *frequency volume chart* at the pre-test whilst 13 (12%) respondents included *frequency volume chart* at the post-test ( $\chi^2(1) = 72.25$ ,  $p < 0.01$ ) (Appendix J). Seventy six (69%) respondents included *MSU* at the pre-test and 79 (72%) at the post-test ( $\chi^2(1) = 22.36$ ,  $p < 0.01$ ) (Appendix J). Eighteen (16%) respondents included *physical examination* at the pre-test and 42 (38%) at the post-test ( $\chi^2(1) = 24.70$ ,  $p < 0.01$ ) (Appendix J). Nine (8%) respondents included *pelvic floor assessment* at the pre-test and 22 (20%) at the post-test ( $\chi^2(1) = 58.88$ ,  $p < 0.01$ ) (Appendix J). Seventeen (15%) respondents included *urodynamics* at the pre-test and 24 (22%) at the post-test ( $\chi^2(1) = 41.37$ ,  $p < 0.01$ ) (Appendix J). Sixteen (14%) respondents included *cystoscopy* at the pre-test and 25 (23%) at the post-test ( $\chi^2(1) = 42.23$ ,  $p < 0.01$ ) (Appendix J). In the experimental group there was a decline in only

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<sup>7</sup>With Yates continuity correction

one criterion from the pre-test to the post-test, the number of respondents reporting *urinalysis* declined from 38 (34%) at the pre-test to 28 (25%) at the post-test. Within the control group the pre- and the post-test response remained consistent or fell in five of the seven criteria. The only two responses which improved slightly were *physical examination* and *urodynamics* (Appendix I).

#### *Strategies for the promotion of continence*

Respondents were asked to identify strategies they would use for the promotion of urinary continence, five criteria were selected to score the responses. These criteria were developed from a systematic review of the literature and the Clinical Handbook for Continence Care. The five criteria selected for inclusion were:

1. Bladder re-education (includes mention of bladder training, habit re-training, timed voiding or prompted voiding).
2. Pelvic floor muscle exercises
3. Vaginal Cones
4. Electrical stimulation
5. General exercise

**Table 6.12 Strategies for the promotion of continence, identified by respondents according to group (Appendix F and G)**

Identified factors	Number of respondents including factors at pre- and post-test			
	Experimental PRE-TEST	Control PRE-TEST	Experimental POST-TEST	Control POST-TEST
Bladder re education	96 (49%)	14 (52%)	81 (76%)	4 (28%)
Pelvic floor re education	80 (41%)	11 (41%)	52 (48%)	5 (36%)
Vaginal Cones	0	0	7 (6%)	0
Electrical stimulation	0	0	8 (7%)	0
General exercise	8 (4%)	2 (7%)	0	1 (7%)
	<b>n=197</b> 7 missing cases	<b>n=27</b> 2 missing cases	<b>n=107</b>	<b>n=14</b>

At the pre-test the experimental and control group performed in a similar manner as the results in Table 6.12 show. Bladder re-education was included by 96 (49%)

respondents in the experimental group and 14 (52%) respondents in the control group at the pre-test, by the post-test 81 (76%) respondents included bladder re-education in the experimental group and four (28%) in the control group. Pelvic floor muscle re-education was included by 80 (41%) respondents in the experimental group at the pre-test and 11 (41%) respondents in the control group, by the post-test 52 (48%) respondents included pelvic muscle re-education in the experimental group and five (36%) in the control group. No respondents included the use of vaginal cones or electrical stimulation at the pre-test, by the post-test seven (6%) respondents in the experimental group included vaginal cones as a strategy for the promotion of continence whilst no respondents in the control group included this strategy. Electrical stimulation was included by eight (7%) respondents in the experimental group at the post-test while no respondents in the control group included this strategy.

#### *Pre-test post-test comparison of strategies for the promotion of continence*

Within the experimental group, improvement was made between the pre-test and the post-test in four of the five criteria. The exception was the inclusion of *general exercise*, which fell from two (2%) respondents stating it at the pre-test to no-one stating this factor at the post-test. *Bladder re-education* was reported by 46 (42%) respondents in the experimental group at the pre-test, by the post-test 81 (74%) respondents reported *bladder re-education*, this shift was significant ( $\chi^2(1) = 5.01$ ,  $p < 0.05$ ) (Appendix J). *Pelvic muscle re-education* was reported by 40 (36%) respondents in the experimental group at the pre-test, by the post-test 52 (47%) respondents reported *pelvic muscle re-education*. Although there was a shift between response to this question at the pre- and the post-test, it was not significant (Appendix J). The use of *vaginal cones* and *electrical stimulation* was not reported by any respondents at the pre-test, however, by the post-test seven (6%) respondents reported the use of *vaginal cones* ( $\chi^2(1) = 98.01$ ,  $p < 0.01$ ) (Appendix J), and eight (7%) *electrical stimulation* in the promotion of continence ( $\chi^2(1) = 97.01$ ,  $p < 0.01$ ) (Appendix J). These shifts were significant. Within the control group the pre- and post-test response remained the same or decreased for all criteria relating to the promotion of continence (Appendix I).

### *Patient education*

Respondents were asked a number of questions relating to the methods they used for patient teaching and education. Fewer respondents responded to this group of questions as evidenced by the large number of missing cases especially at the pre-test. Respondents were asked what methods of teaching they used when teaching patients about the management of their urinary and faecal incontinence. Three types of learning and their teaching methods were selected for inclusion to score the responses. These criteria were based on a systematic review of the literature and the Clinical Handbook for Continence Care. The three criteria selected for inclusion were:

1. Cognitive learning (discussion, booklets, diagrams, videos, lectures).
2. Affective learning (listening, encouragement, counselling).
3. Psychomotor skills (demonstration, photographs, video, practice and evaluation).

Respondents responses relating to the methods of teaching they used were divided according to allocation to the experimental or control group as Table 6.13 shows. The pre-test response from the control group was better than that given by the experimental group as shown in Table 6.13.

**Table 6.13 Reported use of types of education used by respondents according to group (Appendix F and G)**

Type of Teaching	Experimental		Control	
	Pre	Post	Pre	Post
Cognitive	75 (37%)	51 (46%)	16 (55%)	7 (50%)
Affective	25 (12%)	19 (17%)	6 (21%)	1 (7%)
Psychomotor	55 (27%)*	47 (43%)	14 (48%)	10 (71%)
TOTAL	N=204 40 missing cases 12 missing cases	n=110	N=29 3 missing cases 1 missing case	n=14

\*Respondents may give more than one response, therefore % is of the total number of respondents.

The experimental group improved their response from the pre-test to the post-test, whilst the control groups response deteriorated in two cases and improved in one. These changes were not significant.

#### *Pre-test post-test comparison of patient education*

In the experimental group when respondents were asked what types of teaching they used at the pre-test and the post-test phases, 39 (35%) respondents reported methods for cognitive learning at the pre-test and 51 (46%) by the post-test, this shift was not significant (Appendix J). Methods for affective learning were reported by 13 (12%) respondents at the pre-test and 19 (17%) at the post-test, this shift was significant ( $\chi^2(1)=43.20$ ,  $p<0.01$ ) (Appendix J). Psychomotor skills were included in the response of 30 (27%) respondents at the pre-test and 47 (43%) at the post-test, this shift was significant ( $\chi^2(1)=3.70$ ,  $p<0.05$ ) (Appendix J). In the control group, the response to methods for cognitive learning and affective learning remained consistent between the pre- and the post-test. There was a slight improvement on the reporting of psychomotor skills between the pre- and the post-test.

#### *Factors which may influence the methods of teaching used by nurses when educating patients*

Respondents were asked what factors affected the methods of teaching they used. Six criteria were developed to score the responses. These criteria were developed from a systematic review of the literature and the Clinical Handbook for Continence Care. The six criteria selected for inclusion were:

1. Motivation
2. Memory
3. Age
4. Compliance
5. Psychological factors
6. Environmental Factors

At the post-test there were again no significant differences between the two groups of respondents. A large number of missing cases were recorded at the pre-test (56, 24%), by the post-test this number had decreased (19, 15%). This improvement at the post-

test with fewer missing cases indicates that a greater proportion of respondents were able to identify factors which may affect the methods of teaching they adopted.

Respondents were asked to record any factors which may affect a patients ability to learn. This question consistently received a poor response, with 56 (24%) non-responders at the pre-test and 19 (16%) non-responders at the post-test.

*Pre-test post-test comparison of factors which may influence the methods of teaching used by nurses when educating patients*

Six factors were recognised as affecting the methods of teaching used by respondents in the experimental group (Table 6.14). Their responses improved significantly for four factors between the pre- and the post-test. *Motivation* was reported as a factor affecting teaching methods by five (4%) respondents at the pre-test and eight (7%) at the post-test ( $\chi^2(1)=68.36$ ,  $p<0.01$ ) (Appendix J). *Memory* was reported by six (5%) respondents at the pre-test and 11 (10%) at the post-test ( $\chi^2(1)=62.94$ ,  $p<0.01$ ) (Appendix J). Age was reported by 18 (16%) respondents at the pre-test and 28 (25%) at the post-test ( $\chi^2(1)=24.69$ ,  $p<0.01$ ) (Appendix J). *Environment* was reported by 13 (12%) respondents at the pre-test and 23 (21%) at the post-test ( $\chi^2(1)=36.90$ ,  $p<0.01$ ) (Appendix J). The response of *compliance* deteriorated from 19 (17%) respondents giving this response at the pre-test to 18 (16%) at the post-test. The response of *psychological factors* deteriorated from 15 (14%) at the pre-test to only nine (8%) at the post-test. Responses from the control group remained consistent between the pre- and the post-test or decreased in all but one factor. No respondents included *memory* at the pre-test, but one (7%) respondent did at the post-test.

**Table 6.14 Factors influencing the methods of teaching used by nurses identified by respondents according to group (Appendix F and G)**

Factors identified	Number of respondents including factors at pre- and post-test			
	Experimental PRE-TEST	Control PRE-TEST	Experimental POST-TEST	Control POST-TEST
Motivation	13 (6%)	2 (7%)	8 (7%)	0 (0%)
Memory	11 (5%)	0 (0%)	11 (10%)	2 (14%)
Age	30 (15%)	2 (7%)	28 (25%)	1 (7%)
Compliance	35 (17%)	6 (21%)	18 (16%)	4 (28%)
Psychological factors	10 (5%)	1 (3%)	9 (8%)	0 (0%)
Environment	24 (12%)	7 (24%)	23 (21%)	2 (14%)
	<b>n=204</b> 52 missing cases	<b>n=29</b> 4 missing cases	<b>n=110</b> 18 missing cases	<b>n=14</b> 1 missing case

#### *Constraints on nursing care of incontinent patients*

Respondents were asked to identify whether there were any constraints on their nursing care of incontinent patients. At the pre-test, 65 (56%) respondents from district general hospitals and 66 (56%) respondents from community hospitals reported that they were constrained in their practice. The factors identified which constrained their clinical practice included, lack of time, staffing limitations, a lack of resources, their lack of knowledge and the type of patient they cared for. At the post-test 40 (35%) respondents from district general hospitals and 35 (30%) respondents from community hospitals reported that there were constraints on their nursing practice. At the pre-test there were 35 (15%) missing cases, by the post-test there were 16 (13%) missing cases.

A far higher number of respondents within the control group reported that there were constraints on their nursing practice at both pre- and post-test, 24 (89%) respondents at the pre-test and 13 (100%) at the post-test, compared to 107 (62%) respondents within the experimental group at the pre-test and 62 (65%) at the post-test.

#### *Pre-test post-test comparison of constraints on nursing care of incontinent patients*

More respondents reported that there were constraints on their practice at the post-test than at the pre-test within the experimental group. At the pre-test 59 (47%) respondents in the experimental group reported that there were constraints on their nursing practice, by the post-test 62 (50%) respondents in the experimental group reported that there were constraints on their nursing practice. Within the control group

the reporting of constraints on practice did not change from the pre-test to the post-test, 13 (93%) respondents reported constraints on their practice at both the pre- and post-test. Overall where specified 31 (25%) respondents reported that their main constraint was time, 12 (10%) reported that staffing limitations constrained their practice, 13 (10%) reported that limited resources constrained their practice and four (3%) reported that their own knowledge was a constraining factor when caring for patients suffering from incontinence, the remaining 37 (30%) respondents reported that the question was not applicable to them, this was reflected in both pre- and post-test responses.

#### *Overall change in response from pre- to post-test*

Overall, of the 49 variables compared at the pre- and post-test using the McNemar test statistic, respondents performance improved significantly for 40 (82%) variables within the experimental group and 28 (57%) within the control group (Appendix J). Whilst the control group did not receive the intervention of the Clinical Handbook, they were participants in a research study about incontinence. It is likely that the mere fact that a research project was being undertaken on this subject heightened individuals awareness of the subject and lead to changes in knowledge, such an effect is described as the 'Hawthorne effect' where subjects awareness that they are involved in a study affects their behaviour and response (Polit and Hungler 1991). In this study the 'Hawthorne effect' may have led individuals to seek information on incontinence which they were less likely to do had they not been involved in a study.

#### *Handbook evaluation*

A short handbook evaluation section was included as part of the post-test questionnaire to allow respondents to express their views on the clinical handbook for continence care. A total of 124 respondents in the experimental group completed both the pre- and post-test questionnaire and received the clinical handbook for continence care, and were therefore eligible to complete the handbook evaluation section. The results of the handbook evaluation were collected at the post-test phase and referred to how useful respondents found the handbook, what the respondents liked or disliked about the handbook, whether they found this approach to clinical updating useful and



why. A group of questions were also asked about further reading, these questions asked whether respondents had referred to the reference book *Clinical Nursing Practice. The Promotion and Management of Continence*, left on each ward and whether respondents had read any other books or journal articles on incontinence or the promotion of continence since the pre-test.

#### *Summary of findings from handbook evaluation*

The main findings from this section may be summarised as follows

- Of the 124 handbook evaluations 91 (73%) respondents found the Clinical Handbook for Continence Care useful. Only two (2%) respondents reported that they did not find it useful.
- When asked what the respondents liked about the handbook, 40 (32%) reported that they liked the layout, 25 (20%) reported that they liked the language used and 23 (18%) the level of detail.
- Ninety-one (73%) respondents felt that the use of a clinical handbook administered in a group setting were a useful approach to clinical updating.
- Eighty-six (69%) respondents felt that this approach to clinical updating could be used in other areas of care.
- Only 29 (23%) respondents reported that they had read the additional reference book left on each ward.
- Twenty-nine (23%) respondents reported that they had read other books or journals relating to incontinence. Only 18 (14%) respondents had read a professional journal, four (3%) a text book and one a pamphlet.

## **6.4 Discussion**

It is widely accepted that nursing should be a research based profession (DHSS, 1972; DOH, 1991). The Report of the Taskforce on the Strategy for Research in Nursing, Midwifery and Health Visiting (DOH, 1993) recommended that the dissemination of research findings is one way of improving the knowledge base of practitioners in order to maximise health gain, effectiveness and efficiency. Closs and Cheater (1994) suggest that it is through the evaluation and summarising of research studies that the knowledge base is continuously built. Horsley *et al.*, (1983a) suggest that research

findings should be developed into a 'package' where a description is given of how research findings can be used in practice. Such a 'package' was developed as part of this study and was tested amongst nurses working within care of the elderly settings.

This chapter has reported the effect of a user friendly research based clinical handbook on nurses' knowledge of urinary incontinence. A questionnaire covering important aspects of urinary incontinence was administered at pre- and post-intervention phases. The overall results show that the handbook was effective in improving nurses' knowledge of urinary incontinence, with the experimental group improving their questionnaire score on average by 7.03 (95% CI, 5.675-8.383), a significant improvement, whilst the control group only improved by 1.40 (95% CI, -1.145-3.945) which is not significant.

Only half of the nurses who attended the pre-test returned to attend the post-test session. This study highlights the difficulty of recruiting nurses to take part in research, despite offering an education package on incontinence and a certificate of participation. This recruitment problem has been found in other studies. For example, Funk *et al.*, (1991a) looked at barriers and facilitators to the use of research in practice and sent a postal questionnaire to 5000 nurses; 1989 responded giving a 40% response rate. This work undertaken in the United States provided a pack of coffee and a letter inviting the recipient to relax and take a few moments to complete the questionnaire. Szonyi and Millard (1994) highlight difficulties in recruiting general practitioners in their study which evaluated an education package on incontinence for general practitioners in Australia. One hundred and sixty questionnaires were sent out to general practitioners (GPs) chosen at random, with the intention of recruiting 120 GPs. The initial response was poor and therefore a further 287 letters were sent. Szonyi and Millard (1994) had a final response rate of 124 of 510 GPs (24% response rate). Their incentive of an education package was similar to the current study but their response rate was even lower than the study reported here.

Careful timing, substantial effort and finance can help overcome the response rate problem as shown by Roe *et al.*, (1993b; 1994) in their work investigating nurses'

knowledge on leg ulcers. They had a target population of 171 nurses, of whom 146 responded, giving an 85% response rate. However the community nurses involved were asked to attend group meetings over lunch-time and lunch was provided. This may have acted as an incentive, although most community nurses would return to their practice base around lunch-time anyway (Roe and Luker, 1992).

There was a high drop out rate in the present study so it was important to determine whether biographical or professional factors, or baseline knowledge influenced who dropped out. For example, if the drop out rate was higher for particular grades or in the control group, we would not expect our results to be generalisable as those that stayed with the study would no longer be a representative mix of staff. We must consider whether drop out rate was influenced by baseline knowledge, for example, perhaps those who remained in the study had a lower score at the outset and considered the update to be of particular benefit. Or perhaps those with a higher baseline score felt more confident to continue in the study. If drop out was associated with baseline knowledge score it would be difficult to evaluate the true impact of the intervention. Statistical analyses were undertaken to determine any such differences. The nurses who dropped out of the study were the same as those that remained in the study in terms of both biographical details and knowledge scores, and has therefore allowed greater generalisability of the post-test findings. In addition the mean knowledge score of nurses in the experimental and control groups did not differ significantly at the pre-test for UKS. This background information showed minimal baseline differences between the experimental and control group population.

It would appear that an important characteristic was qualification in its effect on knowledge score. This effect has been found in other studies. For example Roe (1989) explored the effect of location and level of training on nurses' recommendations for the use of bladder washouts. Significant differences were found between recommendations made by enrolled nurses and registered nurses. In the present study those nurses who did not hold the RGN qualification were enrolled nurses (EN) often working at grades C and D. They were usually employed as team nurses or associate nurses. It is of interest to note that although the ENs scored significantly lower on the

UKS (11.60) than the RGN qualified staff (15.49) at the pre-test, both groups had improved significantly by the post-test. At the post-test RGN qualified staff had a mean score of 22.41, whilst the EN staff improved to 19.05, giving an improvement of 7.45 amongst ENs and 6.92 amongst RGN. This shows that the clinical handbook for continence care was accessible to both RGN qualified staff and non-RGN qualified staff. This accessibility of research information to all levels of qualified staff is important. This study indicates that decanted research information may be effectively used for educational purposes amongst qualified nurses. However, it is necessary to target other groups of care staff including care assistants and nursing students in order to disseminate research information more widely.

Whilst this chapter reports an effective method of disseminating research information it does not address the issue of implementation and its effect on the delivery of care. The provision of accessible, user-friendly information will not necessarily influence practice. This study recognised that the clinical handbook for continence care was unlikely to impact substantially on current practice in a measurable way. Instead it aimed to improve nurses' knowledge of continence care and thereby influence them to change their behaviour. However, this study shows the important first stage of disseminating research evidence. Without the crucial first stage of having knowledge of research evidence, implementation cannot take place. Further studies are needed to determine whether provision of user-friendly research based information leads to changes in behavior which enhance the delivery of patient care.

In conclusion a method for the dissemination of research evidence for the promotion and management of incontinence has been undertaken and has shown significant improvements in nurses' knowledge. The clinical handbook for continence care offered a user friendly research based handbook on a clinical area relevant to nurses working with the elderly and was easily accessible to all grades of qualified staff. The dissemination of research findings is essential if evidence based health care is to become a reality and this study has clearly demonstrated one method by which this can be successfully achieved.

The following chapter presents the final study, which aimed to provide an intervention to promote the use of research evidence in practice and offers an evaluation of the intervention in terms of both nurse and patient outcomes.

## **6.5 Summary**

The major findings of this chapter are as follows:

1. Recruiting nurses to take part in research is difficult.
2. Although there was a high drop out rate between pre- and post-test, the nurses who dropped out were the same as those who remained in the study, in terms of biographical details and knowledge scores.
3. Minimal baseline differences were shown between the experimental and control group.
4. Qualification affects knowledge score.
5. The study addressed the first phase in the process of the disseminating research information, it does not indicate whether new knowledge was implemented and to what effect.
6. The handbook was effective in improving nurses' knowledge of urinary incontinence.

## **Chapter Seven: Implementing research findings in a clinical setting: a case study**

## **7.1 Introduction**

This chapter will continue to explore the dissemination and utilisation of research evidence on incontinence. The chapter will start by outlining the methodological approach used, and the aims of the research project will follow. The research design will be detailed, and the sample and methods of data collection described before the pilot study, intervention and organisation of the study are outlined. The section describing the intervention will outline the four aspects of the intervention: education, critical appraisal skills, accessibility of information and facilitation. The remainder of the chapter will present the findings and discussion.

## **7.2 Methods**

The general methodology used for this part of the study was a case study of a single unit, therefore the population under examination included both nurses and patients. The unit under examination was a community hospital located in a semi-rural community in the South of England, the unit had 30 beds. In order to present the methodology and results coherently, information related to the different groups will be presented separately under distinct sub-headings as each group required the use of different specific methodologies to gain essential information.

### **7.2.1 Research Objectives**

There were three objectives of this study, each of which were informed by the literature reviews in Chapters Two and Three and the evidence reported in Chapters Four, Five and Six. They were:

- To introduce a strategy for the implementation of research findings on bladder re-education in one setting, based on information provided by practising nurses.
- To evaluate the strategy/intervention at one setting, in relation to nurses' knowledge and attitudes to incontinence and nurses' attitudes to research.
- To identify the impact of the intervention on patient outcomes using a case study approach.

### **7.2.2 Research Design**

The research design adopted for this stage of the study combined both a quantitative and qualitative approach and comprised a case study (Silverman, 1993), using pre- and post-intervention measures (Field and Morse, 1992). A case study can be defined as an empirical enquiry which investigates a contemporary phenomenon within its real life context (Yin, 1994). Yin (1994) further describes the case study enquiry as a method which:

*“copes with the technically distinctive situation in which there will be many more variables of interest than data points and relies on multiple sources of evidence with data needing to converge in a triangulating fashion”* (triangulation is discussed in detail in Chapter Five, section 5.2.3).

### **7.2.3 Sample and recruitment of subjects**

The population and sample can be divided into two groups: qualified nurses, health care assistants and patients. The sample was drawn from a single site in HA1: a community hospital with 28 beds in a semi-rural location in the South of England. A single site was selected in order to provide in-depth analysis of the use of research in practice. The specific site was chosen because in previous studies (reported in Chapter Four and Five), the unit nurse manager had expressed an interest in being involved in further development work. This co-operation facilitated ease of access to the site. Accessibility of the sample is of considerable importance when undertaking a case study.

#### *Nurses*

The nurse sample was drawn from all levels of nursing staff at the single site under investigation. All qualified nurses and HCA's were invited to take part in the project because the previous nurse interviews (Chapter Five) had identified the need to involve the whole care team in research initiatives. There was a potential population of 28 nurses: 19 qualified nurses (RGN) and 9 health care assistants at the pre-test. By the post-test 18 qualified nurses (RGN) and 8 health care assistants were available to take part, two individuals having left the unit



### *Response Rate*

Nineteen (100%) qualified nurses and four (44%) health care assistants took part in the pre-test phase of the project. By the post-test, a potential of 26 nurses were available to take part. Fifteen (83%) of the 18 qualified staff and three (37%) of the health care assistants took part.

### *Patients*

The criteria for selecting the patient sample were as follows: any patient suffering from symptoms of frequency, urgency, urge incontinence, leakage or nocturia could potentially become the subject of a single case study. These criteria were used based on the literature as being responsive to the clinical intervention of bladder re-education. Patients suffering from these symptoms are more likely to respond to the intervention of bladder training (AHCPR, 1992). Nurses identified individual patients with these symptoms whom they considered to be good candidates for bladder re-education programmes and were cognitively intact. The nurse considered an individual a good candidate for bladder training if they were well motivated and likely to comply with a bladder training programme. Their decision was largely based on their previous experience of caring for the patient. Patients were identified through the nursing staff, who were aware of the study and its purpose. The hospital had 30 beds, although the number of patients suffering from incontinence fluctuated.

### *Response Rate*

Four patients were followed through over a period of 8 weeks. The number of potential patients was small (10) and a number had to be excluded because of poor general health and their inability to co-operate (6). Of those patients who were asked to take part all four gave their consent, giving a 100% response rate.

## **7.2.4 Methods of data collection**

### *Nurses*

Data were collected from nurses at pre- and post-intervention phases. Three sets of data were obtained relating to: nurses' knowledge of incontinence, nurses' attitudes towards incontinence and their attitudes toward research.

### *Urinary incontinence knowledge questionnaire*

The data collection instrument used for gaining information on nurses' knowledge of incontinence comprised a semi-structured questionnaire and was adapted from the continence care questionnaire used previously (a copy of the adapted urinary incontinence knowledge questionnaire is included in Appendix K). It collected biographical information including details of age, sex, qualification and grade and asked specific questions related to incontinence including: who suffers from incontinence, types of urinary incontinence, assessment of and investigations for urinary incontinence, as well as strategies for the promotion and management of continence. The questionnaire consisted of four biographical questions and eight questions relating to nurses' knowledge of urinary incontinence.

### *Nurses' attitudes to incontinence*

Data relating to nurses' attitudes to incontinence were collected using an attitude scale originally developed by Cheater (1990). Cheater developed a 16 item scale on nurses' attitudes to urinary incontinence. Following its initial use the author recommended refinement of the scale, and therefore only 12 items were adopted for use in this study. This scale was adopted because it was shown to have face validity and internal consistency reliability, and it was administered to the nurses with the knowledge questionnaire. A copy of the adapted continence attitude questionnaire is included in Appendix K.

### *Research attitude scale*

Data relating to nurses' attitudes to research were measured using an attitude scale (Appendix L).

### *Development of a research attitude scale*

The need for a research attitude scale was evident from the in-depth interviews with nurses reported in Chapter Five. The interviews revealed a number of persistent attitudes to the use of research in practice, and before implementing a research based intervention it was considered useful to explore nurses' attitudes to research. The research attitude scale was developed according to the guidelines recommended by DeVellis (1991), which include eight steps in scale development:

1. determine clearly what you want to measure
2. generate an item pool

3. determine the format of measurement
4. have initial item pool reviewed by experts
5. consider inclusion of validation items
6. administer items to a development sample
7. evaluate the items
8. optimise scale length

The development of the research attitude scale will be described in relation to these headings.

*Determine clearly what you want to measure* The intention of the scale was to measure nurses' attitudes to the use of research evidence in clinical practice, not to research generally - either outside of nursing or not in relation to practice. Therefore the items that needed to be measured were the attitudes of nurses to the use of research evidence in clinical practice.

*Generate an item pool* The scale was developed following the series of interviews undertaken with nurses earlier in the study (Chapter Five) exploring nurses' views of research in practice. A pool of attitude statements about research were extracted from the interviews. Both positive and negative statements were included. The item pool consisted of 18 items and some items were very similar.

*Determine format for measurement* The format adopted for measurement was a Likert scale (Polit and Hungler, 1991; Oppenheim, 1992; DeVellis, 1991). Each item was presented as a declarative sentence followed by five response options that indicate varying degrees of agreement with the statement. The response options were:

*strongly agree                      agree                      uncertain                      disagree                      strongly disagree*

There is some debate over the inclusion of an uncertain category in attitude scales. It may be argued that an uncertain category makes the task of responding less objectionable to people who do not hold a strong view on the subject whilst others suggest it encourages 'fence-sitting' (Polit and Hungler, 1991). However, those who are uncertain may not respond to an item, and a non-response still needs to be scored, for this reason the uncertain category was included in the scale.

*Review by experts* Three experts were asked to review the 18 items in the item pool. One was an expert in questionnaire design and scale development and two were experts in nursing research. The experts examined the relevance of each item for its

clarity and conciseness, and they suggested that some of the statements overlapped and therefore two statements were removed. Comments on item wording were incorporated. The review of the items by a panel of experts gave the scale content validity.

*Inclusion of validation items* DeVellis (1991) suggests the inclusion of a brief social desirability scale to avoid respondents choosing options which they know are socially desirable. Such a scale was not included in this scale as it was not considered relevant for the population under examination, and the social desirability of 'correct' responses to the use of research in clinical practice are not necessarily easy to determine. In addition it would have increased the number of statements to be included.

*Administer items to a developmental sample* The scale was administered to a small convenience sample of three qualified nurses and amendments were made to the scale on the basis of this pilot study. Of the 16 items piloted, feedback was sought on clarity, and the appropriateness of the response categories. A second pilot study of 10 qualified nurses was undertaken before the final ten items for inclusion were decided. This pilot sample reported some noticeably repetitious statements and these were removed. Ideally the piloting of items for an attitude scale should be undertaken on a large sample, but this was not possible within this study due to time and financial constraints.

*Evaluate the items* Following the pilot, each item was reviewed and informal feedback was received from the pilot study participants before the final 10 items for the scale were decided.

*Optimise scale length* The final scale comprised ten statements and was achieved using four positive and six negative statements about the use of research in clinical practice.

### **7.2.5. Data collection instruments**

The instruments were administered before education sessions which formed part of the intervention. These data provided baseline information on nurses' knowledge and attitude towards incontinence and their attitudes toward research. Post-intervention data were obtained eight weeks later by inviting the nurses to a feedback session where they could express their views about the study and the intervention and were

asked to complete the post-test questionnaire and attitude scales. This second round of data collection did not include biographical information, which was unlikely to have changed, but included a short evaluation section to allow anonymous expression of views. The evaluation section asked how useful each of the four aspects of the intervention had been to staff: the education session on bladder re-education, the critical appraisal skills workshop, accessible research information and facilitation. Within the evaluation the nurses were asked to rate which aspect of the intervention they found most useful. Space was also given for additional comments on their overall views. A period of eight weeks was chosen to collect post-intervention data, partly due to study time constraints (funding was awarded for a limited period). However, eight weeks provided sufficient time to implement bladder re-education strategies and was therefore the optimum time for collecting post-intervention information from nurses. There is limited research evidence on the optimum length of time for the implementation of bladder training strategies, although it is likely that any changes in voiding pattern will be evident within six to twelve weeks of implementation; however, further changes or earlier changes may occur (Sandvik, 1995; Wyman, 1993; O'Brien *et al.*, 1991). The collection of post-intervention data at an eight week period was deemed appropriate to maintain staff interest in the study and to avoid loss of nurses to follow up due to changing jobs etc.

### *Patients*

In order to evaluate the effect of increasing nurses' education about the research evidence on incontinence and bladder re-education in particular, a case study approach was adopted to measure patient outcomes. A case study may be defined as a detailed examination of a single subject, a single setting or a particular event (Field and Morse, 1992) (see section 7.2.2 for a description of a case study). Yin (1994) suggests that case studies allow an investigation to retain the holistic and meaningful characteristics of real life events.

A multiple case study design (Yin, 1994) was adopted for this stage of the project. In order to maximise the validity of data, triangulation of methods was used (as

described in Chapter Five, section 5.2.3). Within each case study, data were collected using the following tools:

- data collection from clinical notes

- wet episode charts (Wyman, 1993)

- taped interviews including severity index (Sandvik, 1993b)

Each of these tools was used at a pre- and post-test phase.

Patients were identified as suitable candidates for bladder re-education according to the eligibility criteria described in section 7.2.3.

If any two or more of these eligibility criteria were present, the nurse could implement a bladder training programme. The project was explained by the patient's named nurse and an information sheet given regarding the project (Appendix M), and the patient was then asked to consider whether he/she would like to be involved. If the patient agreed to take part in the project they were asked to sign a consent form (Appendix N). Data were obtained by consulting the clinical notes, both medical and nursing, for documentation of clinical practice related to incontinence. The data collected using closed question data collection schedules included: whether an assessment was completed, what investigations were carried out, what strategies for the promotion of continence were implemented, what management strategies were adopted, what medications were used and whether referral was made to other health care professionals e.g. continence adviser (see Appendix O for data collection schedule). Wet episode charts were recorded by the nurses for three days in order to obtain an objective measure of the problem. These charts monitored the number of episodes of incontinence, the number of dry runs (toilet visits which did not result in a void) and the number of pads used (see Appendix P). The use of continence charts to gain baseline information of patients suffering from incontinence is widely used. They can take many forms including frequency volume charts (Sandvik, 1995; Wyman, Chuoi, Harkins, Wilson and Fantl, 1988; Kassis and Schick, 1993) and bladder diaries (Hyland, 1991). The wet episode charts were adopted for use in this intervention as they had been previously used (Wyman, 1993) and offered a simple, effective means of collecting information on leakage. In order to supplement this information and to provide an additional objective measure, taped semi-structured patient interviews were undertaken. Within the interviews an attempt was made to

determine how severe the problem of incontinence was, and the severity scale developed by Sandvik and colleagues (Sandvik *et al.*, 1993b) was adopted to determine severity. Sandvik *et al.*, (1993b) developed and validated a severity index for urinary incontinence against a 48-hour pad test. An additional outcome measure of a standardised pad test was proposed, however potential problems of compliance were anticipated, and Sandik *et al.*, 1993b had developed a severity index which was shown to be a valid measure for assessing incontinence. In addition each patient was asked about the continence care they had been given since their admission. Specific questions were asked about whether they had been asked directly about their incontinence problem, if any explanation had been given about why the problem occurred, what help they had been given for their bladder problem and what additional help they may have liked (Appendix Q for patient interview schedule). Taped interviews were only undertaken once consent had been obtained from the patient, and all taped interviews were transcribed on the same day as they were undertaken. The patient interviews were kept very brief. Most of the hospital patients had additional medical problems, and therefore a short interview was deemed most appropriate on discussion with the nursing team. Patient data were collected using a case study approach on four patients.

#### **7.2.6 Data management and analysis**

Data management and analysis will be described under two sections, nurses and patients.

##### *Nurses*

All data collected from the nurse sample were coded and entered onto the SPSS computer package and conventional statistical tests were computed. The data set was small due to the nature of the single site case study approach only descriptive statistical analysis was therefore undertaken.

##### *Patients*

Qualitative and quantitative data were analysed separately. Patient data were only collected from four patients, and therefore all analysis (of patient data) was undertaken manually. Content analysis was undertaken on the patient interviews (content analysis has been described in Chapter Five, section 5.2.8.1).

### **7.2.7 Pilot Study**

#### *Nurses*

The three data collection instruments used were piloted on a sample of convenience, comprising six qualified nurses working in elderly care. Both the knowledge questionnaire and the incontinence attitude scale had been used previously, but because both tools had been adapted for use in this study it was considered important to pilot them on a population of elderly care nurses. No amendments were made to these instruments following the pilot study. The research attitude scale was developed specifically for the project and underwent two pilots on convenience samples: the first comprised three qualified nurses and the second, the six qualified nurses in elderly care. The pilot of the research attitude scale highlighted a number of problems of both wording and difficulties in response, resulting in a number of 'don't know' responses. As a result of this, only 10 statements from the original 18 were included in the research attitude scale.

#### *Patients*

Each of the measurement tools used in the patient case studies was piloted on one patient at the case study site, and a number of changes were made to the patient interview before it was used in the study. Changes were made to question wording and one question was omitted because responses seemed to overlap with those from previous questions.

### **7.2.8 Intervention**

The aim of the research was to introduce and evaluate an intervention to promote the dissemination and implementation of research findings on incontinence in a clinical setting. The following section describes the intervention.

The intervention was developed on the basis of findings from the postal questionnaire and nurse interviews carried out previously (Chapter Four and Five). A strategy to aid the implementation of continence research in clinical practice in one unit was developed based on recurrent themes which arose in the nurse interviews. Four factors were identified by nurses and were considered to aid the implementation of



research findings in practice. They included education on aspects of care and critical appraisal skills, the provision of accessible information and the facilitation of change. The resulting intervention was developed and comprised the four issues highlighted:

**1. Education:** provision of an education update on bladder re-education to ALL staff in the form of a study afternoon local to the clinical setting. An education package was prepared by the researcher and the continence adviser. The package comprised an overview of urinary incontinence, prevalence and aetiology, and then gave an overview of bladder re-education covering the following items:

*what is bladder re-education?*

*types of bladder re-education*

*who should undergo a bladder re-education programme?*

*why is bladder re-education useful?*

*existing research evidence on bladder re-education*

*why does bladder re-education work?*

*importance of patient assessment*

*use of charts*

*bladder re-education programmes:*

- *bladder training*
- *habit retraining*
- *timed voiding*
- *prompted voiding*

*the research project*

The session lasted two hours and was delivered by the continence adviser. The session was interactive, with questions encouraged.

**2. Critical appraisal skills workshop:** Provision of a critical appraisal skills workshop, to enhance nurses' research awareness and critical reading skills. The critical appraisal skills workshop was undertaken on a separate day. The session lasted one and a half hours and was presented by a lecturer in palliative care with particular experience in the teaching of research methods and critical appraisal skills. Each nurse was provided with a letter of invitation containing a paper to read before the session. The lecturer used a guide to reading research critically which covered

twelve aspects of the paper. The first four aspects comprised an overview before eight questions were considered which included:

*the research problem*

*setting*

*sample*

*variables*

*reliability and validity of data*

*results*

*discussion*

*relevance to practice*

The session was an interactive workshop allowing all the nurses to make a contribution. The paper selected for the critical appraisal workshop was a research paper on the use of bladder re-education in an elderly population. This example was selected in order to provide a relevant example for the nurses, whilst making it clear that critical appraisal skills used for appraising a specific paper can be applied to other papers covering different clinical areas.

**3. Accessibility of Information:** decanted user friendly information on continence care was made available to all staff, along with provision of relevant published works relating to the care of incontinent patients. The researcher compiled a folder of relevant published research on bladder re-education. This literature was collected following a search of the literature from 1983-1993 in English using the databases MEDLINE and CINAHL. The following search terms were used:

incontinence

bladder re-education

bladder training

habit training

prompted voiding

timed voiding

nurse interventions

toiletting

A lever arch A4 folder was left in the ward coffee room/locker area containing these papers. The nurses were all told about the information folder and what it comprised at

the first study day. This file was considered to be of some importance because it contained information which would need to be appraised by the nurses themselves, although it has been demonstrated that information files are rarely used by nurses (Chapter Six). The nurses had been provided with the necessary critical appraisal skills and it was considered important to allow them the opportunity to use these skills immediately without the necessity to source the materials themselves.

**4. Facilitation:** both research staff and a clinical specialist were available to advise and encourage the use of research in practice. Previous research evidence (Wilson-Barnett *et al.*, 1990) suggests that a researcher can act as a facilitator when implementing changes in practice. This study aimed to offer support to the nurses involved in the study, and the support was provided on an informal basis. The continence adviser left a number where she could be contacted and the researcher made regular visits to the unit over the eight week duration and provided a telephone contact number at other times.

### **7.2.9 Organisation of the study**

Ethical approval was granted by the local Trust Ethics Committee and approval was also obtained from the hospital manager for the project to be undertaken. Preliminary meetings for nursing staff to attend were arranged with the ward sister. At these 20 minute meetings, the project was explained and each member of staff was provided with a short information sheet describing the projects aims and objectives along with details of funding and ethical approval, and an opportunity for questions was given. A contact name and number for the project was also provided. Eighteen (95%) qualified nurses and 5 (55%) health care assistants nurses attended the explanatory meetings. These preliminary meetings were of great importance as they ensured all staff were aware of the project and were therefore able to make an informed choice of whether or not they wished to become involved. The type of questions asked at the preliminary meetings were: 'Will it take a lot of time?' and 'How will our patients be involved?'.

Each nurse was invited by personal letter to attend one of the two education sessions on bladder re-education and one of the two critical appraisal skills workshops. The

same session was given during a daytime slot and an evening slot, to maximise attendance and include the night staff. Before the education session the knowledge and attitude questionnaires were administered within a group to maximise response and to allow for any queries to be answered.

Research information on bladder re-education was provided in two forms: four Clinical Handbooks for Continence Care (Roe and Williams, 1994) and a collection of published primary research papers were left on the ward. In each of the handbooks and the research papers file, a sheet was provided for individuals to tick when they consulted any of the information.

Facilitation was provided by the researcher and the continence adviser: the researcher to provide specific support on using the research findings and the continence adviser to provide expert knowledge on the subject area.

## **7.3 Findings**

The aim of this study was to evaluate the effect of the intervention described on nurses' knowledge and attitudes and on patient outcomes. Therefore data were collected from two sources: nurses and patients. The findings from both groups are presented separately.

### **7.3.1. Nurses**

#### *Population and Sample*

Of those nurses who took part in the pre-test two (9%) were sisters and were employed at grade G and F. Five (22%) were primary nurses, nine (39%) were associate nurses, three (13%) were team nurses and four (17%) were health care assistants. Twelve (52%) nurses were employed at grade E, four (17%) at grade D and four (17%) at grade A. Seventeen (74%) nurses were RN qualified, one (4%) nurse held the EN qualification, six (26%) nurses held ENB qualifications and two (9%) a university degree. Five held 'other' qualifications and these included the Diploma in Nursing and an NVQ qualification held by one of the health care assistants. Three

(13%) health care assistants held no qualification. The age of the nurses and health care assistants (HCA's) ranged from 23-55 years with an average age of 37 years.

#### *Continence Education*

A potential score of 45 was possible for each qualified nurse or HCA for the continence questions. At the pre-test, 23 staff took part (19 qualified nurses and 4 HCA's). The scores for continence questions ranged from 5-23 with 13 (61%) nurses scoring less than 15. The mean pre-test score was 14. By the post-test, 18 qualified nurses only took part, and the scores ranged from 8-26 with 13 (72%) scoring over 15. The mean post-test score was 19. Overall there was a shift between pre- and post-test, from a mean of 14 to 19.

#### *Continence Attitude Questions*

There was a potential score of 60 on the continence attitude statement scale. At the pre-test the number of appropriate responses ranged from 28-46 with a mean of 40. By the post-test, only 18 qualified nurses took part, and their post-test scores on attitude questions ranged from 33-56 with a mean of 43. The following table gives an example of the shift in score between pre- and post-test.

**Table 7.1 Shift in score for a sample of pre- and post-test responders to the continence attitude questionnaire.**

<b>ID</b>	<b>Pre-intervention score</b>	<b>Post-intervention score</b>
04	43	46
06	43	49
08	32	44
14	28	36
15	42	48
17	32	45

#### *Research Attitude Questions*

Twenty-three staff took part in the research attitude questionnaire, 19 qualified nurses and four HCA's. The potential score for the research attitude questions was 50. At the pre-test the total scores ranged from 23-45 with a mean of 35. By the post-test, only 18 qualified nurses took part, and their scores ranged from 30-47 with a mean of 39. The following table gives an example of the shift in score between pre- and post-intervention.

**Table 7.2 Shift in score for a sample of pre- and post-test responders to the research attitude questionnaire.**

ID	Pre-intervention score	Post-intervention score
04	38	42
05	35	38
06	23	38
08	45	47
14	31	40
15	29	38

#### *Nurses' evaluation of the intervention*

Within the post-intervention questionnaire, a short section explored the views of the qualified nurses on their participation in the research project. Only 14 (78%) of the 18 post-test respondents completed this section. The evaluation section asked how useful they had found each aspect of the intervention and to rate each one. The majority (64%) felt that the education sessions on incontinence and bladder training had been the most useful aspect of the intervention. The critical appraisal skills workshop, accessibility of information and facilitation were all considered of equal importance and relevance. All the respondents felt that the approach to the implementation of research in practice adopted in the study was useful. One qualified nurse commented:

*"It was really useful because it was ward based, at the sharp end".*

#### **7.3.2 Patient case studies**

The following hypothesis was posed when collecting data from the patients:

*Patients will benefit from increasing nurses' knowledge and awareness of research evidence on bladder training.*

The effect of nurses' education, provision of accessible information and facilitation on patient outcomes in terms of their incontinence was evaluated using four case studies of incontinent patients at one unit where the continence research in practice initiative was undertaken. For each case study, data were collected from three sources on two occasions - each case study will be described and treated as a single subject experiment, taking measures before and after an intervention (Polit and Hungler, 1991).

### *Case Study One*

Following the education sessions, the junior sister at the unit identified a 73 year old man, Mr A, as a suitable candidate for a bladder re-education programme because he was well motivated and had some insight into his problem. He did, however, have a complicated medical history which included stroke, surgery and cancer.

Review of his clinical notes at the pre-test phase found that Mr A had been suffering from urinary incontinence for three months; however, no medical diagnosis of his urinary incontinence had been recorded, no continence assessment had been completed and no investigations undertaken. Bladder training had not been introduced and no medication had been prescribed. The use of penile sheaths was the management strategy adopted. No referral had been made to other health care professionals and his care relating to his incontinence had not been reviewed since his admission.

An interview with Mr A revealed that most of his problems occurred at night, and his incontinence was classified as being severe according to the severity of incontinence index (Sandvik *et al.*, 1993b). He was not aware of the type of incontinence he was suffering from and felt there was little point in discussing the problem:

P1/8 *'unless they can help, there's not much point otherwise'.*

When asked if he would like further help with the problem, Mr A stated that one of his concerns was wet beds:

P1/10 *'its nasty to have wet beds and wet clothes, nasty for the nurses'.*

This theme appears in other interviews where the patient feels they are causing difficulties or unpleasantness for the nursing staff. It is of interest that the patient was central to the perspective of nurses who were interviewed, and they were keen to promote continence and use the best available methods in order to make the patient's life more comfortable. However the patient was keen to become continent because of the perceived inconvenience his incontinence caused to the nursing staff.

Following the interview, a three day wet episode chart was recorded by the nursing staff. The chart revealed frequency of small volumes (100-150mls) of urine especially

at night. A one and a half hourly bladder re-education programme was adopted and after four days some improvement was noted, with volumes of urine increasing as the time between voids lengthened. Mr A stopped using the penile sheath as a consequence of the changes to his voiding pattern and he appeared more cheerful. On one occasion when the researcher was at the hospital, Mr A observed:

*'It's nice to be sorting things out'*

Sadly, Mr A's general condition began to deteriorate rapidly, and it was considered inappropriate to continue bladder re-education in his weakened state. A second interview could not be obtained; however, a second review of his clinical notes revealed a number of changes. Whilst there was still no diagnosis of urinary incontinence, a continence assessment form had been fully completed and three investigations had been undertaken: completion of a wet episode chart, urinalysis and MSU (mid stream specimen of urine). Bladder training had been adopted and aids and appliances were no longer being used. No drug therapy had been introduced and no referrals made to other health care professionals, although care relating to his incontinence had been reviewed.

Sadly, although Mr A deteriorated, a number of things may be learned from his case study. Perhaps most importantly, from review of the clinical notes it can be noted that those aspects of care within the jurisdiction of the nurse changed between the first and second review: a continence assessment was completed, investigations undertaken, a bladder training programme implemented and the care reviewed. However, those things which would have involved other staff, especially doctors, did not change. The prescription of medication for the treatment of incontinence may have been a useful adjunct to therapy for this patient, however the nurse did not seek GP involvement in the care of his incontinence. The doctor's involvement would have had to have been specifically sought out by the nurse involved. Once again this returns to the fact that incontinence is largely dealt with by nursing staff and, although it should present a multi-disciplinary problem, it is frequently not considered of interest to the multi-disciplinary team and equally is coveted by the nursing team as a uni-disciplinary problem of which they wish to retain control. The data collected from the single case study of Mr A is discussed further in the cross case study analysis.



**Table 7.3 Comparison of pre- and post-test data collected from the clinical notes for case study one.**

<b>Item</b>	<b>Documented at pre-test</b>	<b>Documented at post-test</b>
Diagnosis	No	No
Continence assessment	No	Yes
Investigations	No	Yes
Bladder training	No	Yes
Medication	No	No
Management strategy	Penile sheaths	None
Referral	No	No
Reviewed since admission	No	Yes

### *Case Study 2*

Mrs B was an 89 year old woman who had been in the unit for four weeks. She lived with her 87 year old husband in a small village and had suffered from dementia for some years. Although not completely healthy himself, Mr B cared for Mrs B at home until she was admitted to hospital following a stroke. The stroke, whilst physically incapacitating had, according to her husband improved her dementia: he claimed that she was more alert and appeared to have greater comprehension. Mrs B's primary nurse felt that her problems of incontinence could be addressed using some form of bladder re-education.

Mrs B's clinical notes were reviewed and it was noted that since her admission a medical diagnosis of urinary incontinence had not been made. No continence assessment had been completed and no investigations undertaken. No bladder re-education programme had been adopted and current management included the use of disposable body-worn pads. No drug therapy had been prescribed and no referral to other health care professionals made. Mrs B's care had been reviewed more than once since her admission, and a urethral catheter had been inserted on more than one occasion.

An interview was undertaken including both Mr and Mrs B, when it was determined that Mrs B had no control over her bladder and was unaware when she needed to empty it. Comments made by both Mr and Mrs B will be reported, and where interactions are preceded with an H, Mr B is providing the information. According to

the severity of incontinence index, her incontinence was calculated as severe. When Mrs B was asked how often she was wet, she attempted to deny her problem stating that:

P2/2 *'I'm not wet very much really'.*

However Mr B disagreed and pointed out:

H2/3 *'I don't know, I think it's more often, it's all the time really'.*

Mr and Mrs B's perceptions of the problem were totally different. Whilst Mrs B had agreed to be interviewed on the subject of her incontinence, she remained cagey about the subject and did not want to admit the extent of her problem or perhaps did not perceive the problem to be that great.

The priority issue for Mr B was that he would be caring for Mrs B at home and would be helped enormously if her incontinence was improved or resolved. Mrs B was concerned that whilst in hospital the problem was:

P2/14 *'not nice for the nurses'.*

This theme had arisen in the previous case study with Mr A.

Mrs B's primary nurse undertook a three day wet episode chart which revealed large volumes of incontinence (not measured but collected in bedding and padding), and it was also noted that her fluid intake was very large. On the basis of her wet episode chart a two hourly prompted voiding programme was initiated and advice given on fluid intake and fluids to avoid. However, 8 days later, Mrs B's condition changed: she developed pneumonia and her groin became red and excoriated. Her primary nurse inserted a urethral catheter to manage Mrs B's incontinence, without consulting a member of the research team or the continence adviser. The decision to use the catheter was based on a continence assessment and her deteriorating condition. A review of the clinical notes was made at this time and showed that no diagnosis of incontinence had been made, however a continence assessment form and investigations had been undertaken. A bladder re-education programme had been implemented although the management strategy adopted was a urethral catheter. No medication had been prescribed and no referral made to other health care

professionals, although her continence care had been reviewed almost daily since the pre-test.

**Table 7.4 Comparison of pre- and post-test data collected from the clinical notes for case study two.**

Item	Documented at pre-test	Documented at post-test
Diagnosis	No	No
Continence assessment	No	Yes
Investigations	No	Yes
Bladder training	No	Yes
Medication	No	No
Management strategy	Disposable body worn pads	Catheter
Referral	No	No
Reviewed since admission	Yes	Yes

Following further discussions with the nursing staff and particularly Mrs B's primary nurse, a number of issues lay behind the insertion of the urethral catheter quite apart from her developing pneumonia. It was the intention of the nursing and medical staff to discharge Mrs B home to the care of her husband, which they were both quite insistent was what they wanted. However Mrs B lived in a remote village and would require frequent visits from the district nursing services. These visits would be increased if she was incontinent two hourly, as the wet episode charts had indicated. There were therefore external pressures to insert a urethra catheter in order to lessen the visits of the district nurses, and to relieve some of the pressures of caring for Mr B. These issues will be further discussed in the cross case analysis. Mrs B was in favour of using the urethral catheter whilst Mr B was aware that the catheter could get blocked and cause his wife discomfort until a district nurse arrived. This case illustrates that a wide range of external constraints must be considered when providing continence care.

### *Case Study 3*

This case study has been included, not because a bladder re-education programme was implemented successfully but because the case reports a more global attitude and knowledge shift in the care of an incontinent patient. It indicates that general issues were learnt through the project and implemented to good effect with one patient. Mrs

C was an 88 year old woman suffering from severe dementia, and she had been an in patient for three weeks. Her primary nurse had noted that although Mrs C had suffered from incontinence for 'many years' it had recently become more troublesome and included urgency and frequency. On review of her clinical notes, no medical diagnosis had been made of her incontinence, no continence assessment had been completed and no investigations undertaken. Disposable body worn pads were being used to manage the problem. Mrs C had been referred to her GP, however no treatment had been prescribed. The primary nurse completed a three day wet episode chart and obtained both a urinalysis and an MSU. A urinary tract infection was diagnosed and antibiotic therapy commenced. Mrs C's problems of frequency resolved. The nursing staff had initially considered that Mrs C's problem could be addressed using a bladder re-education strategy; however having completed a continence assessment form and wet episode chart, the problems of urgency and frequency were easily defined as being related to a urinary tract infection. The nurses' post-test evaluation forms indicated that they had found the intervention of the education sessions useful, not least because they had improved their general awareness of the problem of incontinence. Mrs C was not interviewed because her dementia meant that she would not be able to respond to interview; however review of her clinical notes showed that a continence assessment form had been completed, investigations had been undertaken, the GP had been informed and antibiotic therapy commenced. This case illustrates that a heightened awareness by the nurses of issues relating to incontinence may have affected the prompt and effective treatment of this patient's continence problem.

#### *Case Study 4*

Mrs D was an 84 year old woman who had been admitted due to her weakened condition following repeated episodes of diarrhoea a week earlier. Her diarrhoea had resolved but she remained weak and was suffering from urgency and frequency. The problem was debilitating Mrs D because she was finding frequent visits to the toilet exhausting in her weakened state.

On review of her clinical notes, no medical diagnosis had been made of her incontinence and no continence assessment had been completed, although urinalysis and an MSU had been undertaken to exclude a urinary tract infection. No bladder re-education programme had been implemented and disposable body-worn pads were being used. No drug therapy was being used and no referrals had been made to other health care professionals. Care related to her continence problem had not been reviewed since admission.

An interview with Mrs D revealed her weakened state and her sheer exhaustion from walking out to the toilet. The severity of incontinence index (Sandvik *et al.*, 1993) showed her incontinence was severe. She did not know what kind of incontinence she was suffering from and could not remember anyone asking specifically about her bladder problem. She just wanted someone to help her so that she did not need to go out to the toilet so much. When asked whether she would have liked other help with her bladder problem she stated:

P4/12 *'Only if something can be done, I don't usually talk about it'.*

When asked why she did not usually talk about it she replied:

P4/14 *'It's easier if someone else starts talking about it'.*

Mrs D's primary nurse reviewed a three day wet episode chart and urinalysis, and UTI was not evident. Urine output was very small - 10mls-25mls passed hourly-although the chart revealed that she could hold up to 150mls. Mrs D was instructed in a one and a quarter hourly bladder re-education programme by her primary nurse initially, gradually increasing in fifteen minute intervals. It was also noted that Mrs D's fluid intake was very poor, and therefore it was explained that this could be making the problem worse, and advice was given on fluid intake.

Mrs D's progress was slow, but she began to hold 50-100mls and extended the length of time between voids to one and a half hours. At second interview her incontinence was classified as moderate according to the severity of incontinence index (Sandvik *et al.*, 1993). She was pleased that the nurses had asked about her incontinence because

they were actually able to do something about it. Mrs D admitted that she would not have brought up the subject herself.

**Table 7.5 Comparison of pre- and post-test data collected from the clinical notes for case study three.**

Item	Documented at pre-test	Documented at post-test
Diagnosis	No	No
Continence assessment	No	Yes
Investigations	Yes	Yes
Bladder training	No	Yes
Medication	No	No
Management strategy	Disposable body worn pads	None
Referral	No	Yes
Reviewed since admission	No	Yes

A second review of the clinical notes showed a completed continence assessment form, investigations including wet episode chart, urinalysis and MSU, the implementation of a bladder re-education programme, a decline in the use of disposable body worn pads and a regular review of progress. Mrs D's bladder re-education strategy was successful and she has since been discharged home with her continence problem resolved. Her case study offers an objective outcome measure from the project, that the intervention described was successful in achieving the improved continence status of this patient.

## 7.4 Discussion

The dissemination of research evidence is essential if nursing is to base its practice on a sound scientific background. The "passive diffusion of research is inadequate, unsure and slow" (Kirchoff, 1982) and a more active nursing role is required if an efficient, sure and fast method of research dissemination and implementation is to be achieved in nursing. The current study aimed to disseminate incontinence research in an efficient manner, using a case study approach, making improvements in both nursing and patient outcomes.

### **7.4.1 Methodological Issues**

The use of a case study approach enabled the use of a combined methodological approach, using both quantitative and qualitative methods (Silverman, 1993). Case study methodology enables the extensive study of a single unit (Carter, 1991), in this instance, a community hospital. Whilst the number of subjects involved was small, a number of variables were investigated, providing a broad picture. Ideally, if time and money had allowed, a multiple case study investigation would have been undertaken, and such an investigation would have eliminated any single case bias (Yin, 1994). However, an embedded case study approach was adopted allowing study of the community hospital as a whole and the individual units which comprised the groups of nurses and individual patients (Yin, 1994). Case studies yield high response rates, because every individual, both nurse and patient, forms the sample. This study yielded a high qualified nurse response rate at both pre- and post-test phases (100% response amongst qualified staff at pre-test and 83% at post-test). However this high response was not reflected amongst the health care assistants (HCA's). All HCA's at the unit were encouraged to take part in the study, however only four (44%) took part in the pre-test and none in the post-test. It was considered important to involve the whole care team in the study to maximise its impact, and the involvement of all levels of nursing staff (including HCA's) had been a recurrent theme in the nurse interviews undertaken to determine the type of intervention that would be used. However, it may be noted that few HCA's chose to become involved in the study. This may have been due to a number of reasons: general disinterest by these staff. Health care assistants may be unused to being invited to education updates, and they may be unaware of what involvement in a research study would entail, although all of the qualified nurses and HCA's were invited to preliminary meetings to explain the project. However, for whatever reasons lack of HCA involvement in research implementation initiatives may prove limiting, especially in such a fundamental 'hands-on' aspect of care. It would have been useful to have explored in more depth why the HCA's were less keen to become involved in the educational and research initiatives, however this was not the research question being explored in this study.

## 7.4.2 Population and Sample

### *Nurses*

The details of the population and sample were similar to those presented in Chapter Five and included 19 qualified staff (both registered and enrolled nurses) and nine HCA's at the pre-test. These similarities with the group who received the barriers questionnaire were encouraging because the indication was that the case study population was similar and therefore representative of the wider elderly care population originally surveyed. It indicated that if a different community hospital had been selected to form the case study population, its make-up would be similar to the one selected.

Ten years ago the average age of a nurse was 30 years, whereas today it is nearly 40 according to the Institute of Employment Studies report 'Registered Nurse Supply and Demand' (Seccombe and Smith, 1996). The report indicates that nearly two thirds of all qualified nurses are aged between 30 and 50. The nurses in this sample fell largely within this age range. The mean age of qualified nurses and HCA's who took part in the case study was 37 years, with a range from 23-55 years. The mean age was high, although there were a large number of part time staff in the group who were 30 plus, which may reflect those seeking employment in elderly care units. However, the age profile of the average nurse in the nursing population as a whole is increasing.

### *Patients*

A total of four patients were recruited to represent individual (embedded) case studies. Their average age was 83 years. From informal conversations with hospital staff, the average age of patients was often over 80 years, although occasionally younger, respite care admissions would lower the average age. Therefore the available sample was in the upper age range. However, prevalence studies have shown a marked increase in the prevalence of incontinence with age (Thomas *et al.*, 1980; Roe, Wilson, Doll and Brooks, 1996) and therefore it would be expected that the study sample would be drawn from an older age group.



### *Intervention*

The development of the study intervention of education, critical appraisal skills workshop, accessibility of information and facilitation was based on information obtained from the postal questionnaire, semi-structured nurse interviews and previously published research. The intervention offered a combined approach of four strategies to aid research implementation. Ideally, a comparative study of each of the four implementation strategies would have been useful in demonstrating the most effective way of implementing research findings on continence care in clinical practice. However, the aim of this study was to provide a method of developing clinical practice which was both economical and time efficient. Time and financial constraints would not permit such a comparative study. Nevertheless this study was able to show that a combined approach had a positive effect on nurses' knowledge of continence and attitudes toward research and on patient outcomes.

### *Education, knowledge and attitudes.*

Nurses' knowledge of continence issues improved between the pre- and post-test from a mean score of 14 to 19. However, some individuals made increases from a pre-test score of 8 to a post-test score of 26. It would be of interest to determine sustained change in response, and this could be done through intermittent long term follow up within a longitudinal study, although additional problems may be faced in undertaking such a study, including high attrition rates (Polit and Hungler, 1991). In addition, educational improvement alone may not imply changes in clinical practice Funk *et al.*, (1991b), and more recently Chapter Five reports that there are many barriers to research implementation other than lack of education on the subject. However Roe *et al.*, (1996) point out that education of health professionals is essential if there is to be an impact on incontinence sufferers. She suggests the use of both formal education and the dissemination and utilisation of research evidence on which to base health care.

It is widely reported that people do not consult health professionals about their incontinence (Burgio, Ives, Locher, Arena and Kuller, 1994; Sandvik *et al.*, 1993a).

Jeter and Wagner (1990) report that when people do seek the advice of health care professionals they find the doctor or nurse too busy, unhelpful, unsympathetic and lacking in knowledge. Yu and Kaltreider (1987) report that negative staff attitudes affect the behaviour of an individual when seeking help and can also influence the care they receive. Within the attitude scale adapted from Cheater (1991), comparison of three questions can be made. In the current study, six nurses (32%) felt that incontinence was a consequence of ageing compared to 11% (n=42) in Cheater's sample. Six nurses (32%) felt that incontinence is often due to laziness compared to 16% (n=11) according to Cheater (1991), and six (32%) thought that incontinence was more distressing for younger rather than older people compared to 28% (n=106), according to Cheater. It is of interest to note that these misconceptions were more commonly held in the current group than in Cheater's sample, and there are a number of reasons why this might be the case. Firstly the current sample is very small and may be unrepresentative, as four HCAs are included in the sample, whilst Cheater's sample was drawn from qualified staff only. If the HCAs are removed from the analysis, five nurses (33%) felt that incontinence was a consequence of ageing, four (26%) considered it was often due to laziness and four (26%) thought it was more distressing to younger rather than older patients. However, by the post-test for each of the three items only 5% (n=1) of the nurses agreed with any of the three statements. The continence attitude question scores between pre- and post-test on average decreased. This may be accounted for by the drop out of respondents which occurred between the pre- and post-test: 23 nurses took part in the pre-test and only 18 in the post-test. It may have been that those individuals who scored highly in the continence attitude statements at the pre-test did not take part in the post-test, thereby lowering the mean total score.

The mean total score for the research attitude statements increased from 35 at the pre-test to 39 at the post-test, indicating a positive shift in attitude toward research. Each of the nurses involved in the study were aware of the problem of incontinence and had some degree of knowledge on the subject and their attitudes were likely to be affected by many pre-conceived notions and ideas. However the area of research was

new to most of the respondents, leaving room for improvements in attitudes towards research.

#### **7.4.5 Patient Case Study Discussion**

The case studies have been described individually in the previous sections. This section presents recurrent themes occurring in the case studies.

##### *Embarrassment and sensitivity shown by incontinence sufferers.*

A recurrent theme in the patient interviews was the concern about the nurses when they were incontinent. It was a central issue amongst the patients in the study that the problem of incontinence was troublesome to the nursing staff. The problem of incontinence is dealt with by nursing staff continuously, and assessment of their attitudes to incontinence has been reported earlier and shows shifts in attitudes following the intervention of the education programmes. Staff attitudes to incontinence have been investigated in the past by Yu and Kaltreider (1987) and Yu *et al.*, (1989), who reported that staff found the management of incontinence was a time-consuming and frustrating experience. Interviews in this study also revealed that because of patient embarrassment about the problem, patients were unlikely to broach the subject of incontinence themselves without being prompted. This is a lesson to be learnt by nurses. With the commendable move to patient centred nursing, it must not be forgotten that as nurses we must offer patients our expertise if we are able to offer treatments for the problem of incontinence. We cannot wait for patients to ask for the problem to be dealt with. Instead as professionals we should offer every possible treatment to improve patient care. Ory *et al.*, (1986), in their review of the literature, recognise the feelings of apathy, embarrassment and guilt associated with urinary incontinence, which often result in social isolation. Wyman, Harkins and Fantl (1990) also recognise in their review the isolating effects of incontinence. Patients may be too embarrassed to discuss their problem of incontinence. It is therefore for the nurse to take the initiative and discuss this often sensitive subject.

##### *Case recruitment*

Across cases there were a number of difficulties with recruitment and retention of subjects. These were largely due to the fact that patients were recruited from a

hospital setting and often had both urgent and life threatening conditions that needed to be addressed before the problems of incontinence. Mr A in case study one and Mrs B in case study two both developed life-threatening conditions during the course of bladder training. This may not have been the case in a community setting, where patients usually reside. They were in-patients because they were suffering from acute conditions. In addition there was a limited time available for the recruitment of patients due to time and financial limitations, and within a longitudinal study the opportunities for recruitment of appropriate patients would have been far greater.

An issue that came up time and again with the nursing staff when the researcher made her visits to the unit was the seemingly increasing numbers of patients on the ward who suffered from dementia. There was no objective evidence of this increase and it was merely suggested that this group of patients were increasing. These particular patients posed specific problems in the study, due to the fact that the study depended largely on patient interviews as an objective measure of the problem.

## **7.5 Summary**

This chapter has presented and discussed the methods and results of a case study using both quantitative and qualitative methods of data collection. It may be concluded that by providing an intervention to nurses of education, critical appraisal skills workshops, accessible information and facilitation, improvements in nurses' knowledge of continence, attitudes towards research and incontinence are made. In addition, such an intervention seems to have a positive effect on patient outcomes, although this conclusion may be questioned as extrinsic influences were not controlled for within the study. Nevertheless, this case study approach provided an effective way of measuring pre- and post-intervention nursing outcomes. This chapter presents the final study in a sequence of four inter-related studies exploring the dissemination and utilisation of research evidence to practising nurses on continence care. The following chapter draws together a broad discussion which will pull together strands of discussion highlighted in each of the study chapters.

This chapter reports the evaluation of an intervention for the implementation of research evidence on bladder training, in terms of nurses' knowledge and attitudes and clinical outcomes.

The following results were achieved:

1. Nurses' knowledge of incontinence improved following the intervention.
2. Nurses' attitudes to incontinence scores improved following the intervention.
3. Nurses' attitudes to research improved between the pre- and post-test phase.

#### *Patients*

1. Documentation of continence issues in the patient notes improved between the pre- and post-test.
2. The patient case studies showed improvement in wet episodes and reported severity of symptoms.

## **Chapter Eight: General discussion**

## 8.1 Introduction

This discussion chapter identifies common themes which arose in each of the four studies, and these are presented under the following headings:

1. Methodological issues and limitations: this section discusses the way in which a number of methodological approaches were used.
2. Population and sample: issues relating to the population and sample are explored, linking together elements from each study discussion.
3. Theoretical observations.
4. The main findings and other research. This section relates the findings to existing evidence and discusses them within this context.

Conclusions and recommendations are presented in Chapter Nine.

The present investigation has offered further evidence on the factors which practising nurses think erect barriers and offer facilitation to the application of research in nursing practice. It also offers two solutions to the barriers problem in the form of interventions which can be incorporated into clinical practice. The purpose of the research was to:

- identify and investigate barriers and facilitators to the use of research evidence in clinical practice
- evaluate a method of dissemination using an experimental and control group on nurses' knowledge
- evaluate a new strategy for continence promotion using a case study design on nurses' knowledge of incontinence, attitudes to research and patient outcomes.

The report has been constructed in a manner intended to emphasise the common goals and preoccupations underlying a group of interrelated studies. Taken together, it is hoped that the studies reveal a systematic attempt to collect information and develop ideas. The data show that there are tangible barriers to using research in practice which pose very real problems to practising nurses. However, nurses have some of their own solutions to these problems. These nurse-specified solutions were

implemented and evaluated and shown to be successful. However, the over-riding consideration is the immensely time-consuming nature of implementing dissemination strategies for nurses in clinical practice. The implications for organisations involved in the management of health care are enormous. In order to implement evidence-based health care there is a need for organisations to appreciate the need for a planned approach to such initiatives and to identify adequate resources. Health care organisers must realise that the 'costs' of implementation of evidence-based health care (EBHC) include personnel, time out and an adequate framework for implementation. Perhaps this goes some way to explaining the enormous quantity of literature on the problems of disseminating research evidence (Funk *et al.*, 1991a,b; Hicks, 1994; Closs and Cheater, 1994; Nilsson Kajermo, Norström, Krusebrandt and Björvell, 1998) and the dearth of literature on implementation strategies and studies. The nature of the barriers identified by nurses means that to overcome them local, setting-specific interventions need to be identified and implemented. This can only be done through consultation and collaboration with clinical nurses and educators, researchers and experts, all of whom need to take a real interest in clinical practice.

## **8.2 Methodological issues and limitations**

Discussion of methodological issues specific to the design of each study is incorporated within the chapters which report that study. One recurrent methodological issue was the small number in the samples and therefore the representativeness of the groups. The data collected using a postal questionnaire obviously allowed larger numbers to be sampled, but even when exploring barriers to and facilitators of the dissemination and utilisation of research, it would have been valuable to have sampled a larger and more heterogeneous group. However, the sixteen nurses interviewed seemed to be sufficient in number to ensure that all themes were exhausted and that representation of responders and non-responders was obtained. Although the number of participants involved in the case study was small, this single unit case study provided a pilot site for the intervention ideas collected in Chapters Four<sup>8</sup> and Five<sup>9</sup> to be implemented. From the outset, it was evident that few

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<sup>8</sup> Chapter Four, Research in practice: barriers and facilitators.



conclusions could be drawn from such small numbers. However, the case study yielded a model for an intervention to aid the dissemination and utilisation of research evidence and examined the practicalities of implementing the model in one NHS trust.

The issues of non-response (Oppenheim, 1992) were investigated within the study. Non-response was avoided in the first instance by sending out two mailings for each of the postal questionnaires used. Statistical analysis was undertaken in the study presented in Chapter Six to ensure that the respondents at pre- and post-test were similar in terms of biographical details and knowledge. However, a large number of nurses did not respond to the questionnaires at all. These non-responders were not followed up in that study due to time and financial limitations. However, the questionnaire sent out and reported in Chapter Four had a similar initial response rate, and samples of both responders and non-responders were followed up using in-depth interviews to determine whether responders and non-responders to the barriers questionnaire were similar in terms of biographical details and questionnaire response. Response rates in the case study setting were extremely high. Case studies, by their very nature attract high response rates (Yin, 1994). The case study in Chapter Seven<sup>10</sup> included the evaluation of an intervention which may also have enhanced response.

The present project aimed to integrate the results from both quantitative and qualitative approaches using triangulation of methods as a means of validating data collected using different methods. Quantitative as opposed to qualitative research has largely dominated health care research and has been a matter of concern for commentators in the field (Pope and Mays, 1993). Qualitative research has been perceived as a 'soft' option, while quantitative research offers the 'hard' scientifically rigorous option. Perry (1994) summarises some of the ways in which the two research methods have been polarised and these are shown in Figure 8.1.

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<sup>9</sup> Chapter Five. Exploring nurses views on the use of research in clinical practice.

<sup>10</sup> Chapter Seven. Implementing research findings in a clinical setting: a case study.

**Figure 8.1 Some of the hallmarks of quantitative and qualitative research methods**

QUANTITATIVE METHODS		QUALITATIVE METHODS
Experimental	vs	Naturalistic
Objective	vs	Subjective
Hypothetico-deductive	vs	Discovery-inductive
Positivist	vs	Interpretative
Measurement orientated	vs	Representational
Standardised	vs	Flexible
Numeric	vs	Verbal
Universal laws	vs	Cultural patterns
Generalise	vs	Uniqueness
Nomethetic	vs	Ideographic
Explanation	vs	Description
Fixed	vs	Exploratory
Neutrality/impartiality	vs	Reflexivity
Outcome oriented	vs	Process orientated
Survey	vs	Case history
Statistical	vs	Narrative
Psychometric test	vs	Interviews

Source: Perry (1994)

Advantages and disadvantages are associated with each method: trade-offs are sometimes necessary between the breadth (sample size) and depth (detail) of information collected (Daly, McDonald and Willis, 1992). The way forward in research seems to be to build on the benefits of both techniques. Throughout these studies, both quantitative and qualitative methods were drawn upon in order to complement and consolidate findings.

### 8.3 Population and sample

The study identifying barriers and facilitators to research utilisation, the qualitative study and the case study were all drawn from the same sample. The 'handbook' study was drawn from a different sample located in a different geographical area. However the nurses were from the same clinical area, and their ages and biographical profiles

were very similar. One difficulty associated with research into nursing practice is the conflict between maximising the quality of the research as science, and improving the quality of practice - an objective of most research in nursing is to develop practice through sound research. However, sometimes compromises must be made: random samples are ideal for scientific research but are rarely practical for practice development. The present study endeavoured to develop clinical nursing practice by identifying methods through which research evidence concerning incontinence could be incorporated into everyday continence care. It has been argued that nurses are professionally bound to demonstrate development in their practice (Draper, 1996). To date nursing interventions have lacked an evidence base (Luker, 1996) and research and development skills have rarely been applied to the process of development (Kitson and Currie, 1996). MacMahon (1998) identifies a gap between research activity and development activity in nursing and suggests that cultural differences between academic activity and practice are one dimension of the issue. The present study endeavoured to bridge this gap between the existence of research evidence and its implementation to promote developments in practice.

#### **8.4 Some theoretical observations**

The exploration of barriers to and facilitators of research use is not new (Funk *et al.*, 1991a,b; Closs and Cheater, 1994; Dunn *et al.*, 1998). However, the involvement of clinicians in proposals for implementation strategies is less well documented. It was this novel approach which allowed individual practitioners to recommend what they felt would aid implementation strategies. They concluded that education, accessibility of information and facilitation of change were pre-requisite strategies for implementation. These recommendations closely reflect Lomas' (1993) theory of implementation as an active process which uses organisational and behavioural tools to enable practitioners to incorporate new knowledge when making clinical decisions. Such tools include opinion leaders, facilitators, educational outreach, quality improvement approaches and multi-faceted interventions.

Chapter Six took forward one of the recommendations made by practising nurses by assessing the acceptability of a decanted research resource on care of the incontinent

patient in terms of nurses' knowledge. This study used an experimental and control group. Lomas (1993) suggests that identification of the audience and tailoring a particular message is the key to success. It is also possible to apply Rogers' (1995) model of five linear steps in the innovation-decision process<sup>11</sup>. The CHCC offered research evidence on clinical practice in continence care. It provided the first stage in this linear process: knowledge, that is knowledge awareness, knowing that information exists, finding out how to use it and understanding why specific information is useful in continence care. The second stage Rogers refers to is persuasion, when individuals decide to adopt or reject the information supplied. The third stage entails a decision whereby individuals decide whether to adopt the information held in the CHCC. The fourth stage is implementation, applying this concept to the CHCC means that information held in the CHCC is actually used in practice. Finally, confirmation is the stage described by Rogers as the point at which change is:

- accepted and continued

- accepted but later discontinued

- rejected indefinitely

- rejected but for later adoption

However, the objective of study of the CHCC was to determine its effect on nurses' knowledge: it was not to measure impact on patient care. Whilst it is possible to apply use of the CHCC to Rogers' five step linear process, it can only realistically be claimed that use of the CHCC provided necessary information. Its translation into nurses' knowledge was evaluated and a significant impact on that knowledge was demonstrated. However, the present study did not evaluate whether the subsequent four steps were achieved.

It could be argued that Chapters Four, Five and Six assume a targeted, user specified diffusion process as outlined by Rogers, whilst Chapter Seven adopted a dissemination model which uses specified implementation strategies. Lomas (1993) described the implementation process as an active process which uses organisational

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<sup>11</sup> This process is discussed in detail in chapter one, section 1.4.

and behavioural tools to enable practitioners to use new knowledge. Lomas identifies the following key elements of strategies for implementation of a new innovation:

- opinion leaders
- change agents, facilitators
- educational outreach
- quality improvement approaches
- multi-faceted interventions

The study described in Chapter Seven showed that practising nurses recommend the use of multi faceted initiatives, including facilitation, education and opinion leaders.

## **8.5 Relationship of the research objectives to the main findings and other research**

Each of the study chapters includes specific discussion sections. It is therefore not the intention of this section to discuss study-specific issues. Instead it will draw together the debate from each study to provide an overview of discussion points.

There are many methods of disseminating research evidence, including the use of clinical guidelines (Thomas *et al.*, 1998) and facilitation strategies (Camiah 1997). The methods of dissemination adopted in this project were not chosen because they offered the ‘best’ strategy. They were adopted because they were the strategies identified as important by nurses practising in the area where they would be implemented.

### **8.5.1 Facilitation**

Very limited explication is provided of the role and function of facilitation, although it commonly refers to an individual who helps or encourages an action. This study adopted the use of a facilitator in the form of the continence adviser (CA) involved in providing the educational initiative. There is little reported evaluation of the use of facilitators to enable research application in practice. The present study offers one model of ways in which facilitators can be used.

### **8.5.2 Opinion Leaders**

In health care, opinion leaders have been identified to encourage the use of new evidence by setting examples, educating and commenting on outdated practice. This project identified opinion leaders to involve in the educational initiative set out in Chapter Seven<sup>12</sup>, and the education session on bladder re-education was delivered by the local CA who was a recognised and well-respected ‘expert’ in her field. She was also available to provide ongoing support. The involvement of an opinion leader in this multi-faceted intervention may have led to greater levels of compliance with the study among nursing staff, although the nature of the study did not allow for analysis of individual components of the intervention.

### **8.5.3 Education**

The educational input described in Chapter Seven was delivered by an influential and respected individual. The CA delivered the education package and then re-inforced the education through her availability to offer subsequent support (this support was offered in an informal way). Educational outreach or academic detailing is often used in continuing medical education (Wyatt *et al.*, 1998) and often fails to change practice (Davis, Thompson, Oxman and Haynes, 1992), whereas small scale education decided by participants is found to be more effective (Oxman, Cook and Guyatt, 1994). Just such a model was adopted in the present study with some success.

### **8.5.4 Clinical Guidelines**

The use of clinical guidelines has not been central to the present study as this was not a ‘recommended strategy’ put forward by practising nurses. However, a recent systematic review (Thomas *et al.*, 1998) of 18 studies on the effectiveness of introducing clinical practice guidelines to improve professional practice and patient outcomes concludes that clinical guidelines can be effective in changing the process and outcome of care by allied health care professionals. Thomas *et al.*, (1998) suggest that caution is needed in generalising findings due to a number of methodological

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<sup>12</sup> Chapter Seven. Implementing research findings in a clinical setting: a case study.

flaws in the studies reported, including small sample size, poor methods and variation in study settings.

#### **8.5.5 Problems with methods of dissemination**

The method of dissemination used in the present study combined opinion leaders, education, facilitation and accessible information. These methods depended largely on the opinion leader, the local continence adviser whose involvement was crucial in delivery of the combined case study intervention. The involvement of busy individuals poses difficulties for research of this type and support. Particularly, administrative support in the form of preparation of teaching materials by the researcher was essential to secure CA involvement. It seems unlikely that a busy CA would be able to actively support research implementation activity without additional resources, even though as an opinion leader she is likely to be in a position to assess evidence in her clinical area more efficiently than non-specialist nurses.

#### **8.5.6 External influences to changes in practice**

It has been suggested that it is unethical not to base nursing practice upon research evidence (Fawcett, 1980; Styles, 1982). The primary objective of evidence-based nursing is to pursue improvements in patient care. In addition, nursing has in recent years been developing as a profession. Such professional status demands professional accountability. By basing clinical practice on research evidence nurses can demonstrate their professional accountability. In addition, increased consumer demand for high quality health care means that nurses must be informed about and justify the basis of their practice by a sound rationale for consistent patient care (Hicks and Hennessey, 1997). The present study has gone some way to enabling nurses to be informed in an aspect of nursing care.

#### **8.5.7 Diversity of nursing practice**

It is important to recognise the diversity of nursing practice. Whilst it is impossible for one nurse to be an 'expert' in all aspects of care, he/she requires accessible information on many aspects of care provision. Ideally individual nurses within a unit/ward should be identified as a link for a specific subject, e.g. wound care. Such

individuals could link into regular updates and be instrumental in a wider dissemination process to clinical colleagues.

Naylor (1995) notes gaps in the evidence for medical practice that are likely to be reflected even more widely in nursing. Cutler (1997) suggests that the nursing profession should realise *“that its credibility and future rest on its ability to succeed in using the evidence that exists in pragmatic ways to improve care”*. Rogers (1998) recognises that those individuals who entered nursing post-1992 and the project 2000 programme will be expected to offer the driving force in the implementation of research evidence in practice. However, she also recognises that the majority of existing nursing staff were trained before 1992. The present study reflects the fact that most nurses have little formal education in research and the expectation of nurses to search, appraise and implement research evidence is as unlikely to be realised today as when the study began. Responsibility for dissemination and utilisation lies in:

- basic education on research appraisal and research methods
- improved on-going education on appraisal and research methods
- organisational support
- availability of relevant research evidence
- the development of appropriate strategies for dissemination
- direct involvement by facilitators in the implementation process

### **8.5.8 Difficulties of implementation**

The present report has acknowledged that the health policy drive for evidence based health care (EBHC) is getting through to practising nurses. They are aware of the need for EBHC and its importance to their provision of care is not underestimated. However, recognition does not mean implementation. Nurses may recognise the need for EBHC, but without direction, support and encouragement at user level, implementation is unlikely. This study identified continence care as a domain of nursing care where a large amount of research evidence on incontinence was available, but was rarely implemented in a systematic way that would be beneficial to elderly patients. It is likely that lessons learned from this project could be transferred to other domains of nursing care, e.g. wound care, nutrition or pressure area care. The



present study has recognised that to avoid alienation by practising nurses, researchers need to involve them in decision making for adopting appropriate research implementation strategies. Different areas of care may require different implementation strategies. It is the role of the researcher to be responsive to different groups and implement research findings in a way that practitioners will find useful and will ultimately impact on patient care in a positive way.

## **8.6 Summary**

The underlying question posed by this project was 'Is the drive towards research-based nursing practice really feasible?' Although the answer is 'yes', success will require time and effort from clinical nurses and researchers. The effectiveness of any research dissemination and utilisation strategy can only be determined by changes to patient outcomes. A large scale systematic study of a continence intervention in elderly care settings would go some way to answering the question. The present study recognises that to truly achieve EBHC, a culture shift needs to be made which small scale, single aspect of care case studies cannot achieve (Rogers, 1998). However, this culture shift has been a long time coming and in the mean time sub-optimal nursing practice cannot be excused. If one way forward is the conduct of small scale studies ensuring evidence-based (EB) practice in areas of care that will be of benefit to patients, then they must be considered worthwhile. The appropriate use of evidence-based nursing depends largely on thoughtful and considered application of available 'evidence' at an individual patient level. Such evidence needs to be considered in relation to nurses' clinical experience as well as patient preferences. Perhaps one of the most important factors that nurses recognised in the implementation of research in practice was relevance to patient care. An intrinsic element of any endeavour is to improve patient care. However within the literature, with the language of economic and clinical effectiveness being used, the underlying reason for implementation can be lost. The nursing staff in this study always recognised the goal of this work was to improve patient care

Since the present project began with the intention of promoting the implementation of evidence in practice, a number of political and policy changes have taken place

(Promoting Clinical Effectiveness, DOH, 1996a, Research and Development: Towards an Evidence Based Health Service, 1996b, The New NHS: Modern, Dependable, 1997, A first class service: Quality in the New NHS, 1998). The work undertaken proposes solutions in small settings, using opinion leaders, facilitators and academic detailing in a combined approach. It is likely that these approaches remain the recommended strategies for implementation along with the implementation of clinical guidelines. However, the wider, more far reaching proposals recently set out imply that the blanket implementation of research in clinical practice can be undertaken on a larger, 'industrial' scale. Whether or not such strategies will be successful on such large scales remains to be seen, but the organisational pressure behind these changes are enormous (the move towards clinical governance suggest that Chief Executives will set targets for provision of EBHC) and the expectations of health care providers should not be underestimated.

## **Chapter Nine: Conclusions and recommendations**

## 9.1 Conclusions

It is hoped that the findings from the present project provide useful information for nurses endeavouring to use research evidence on continence care in clinical practice. The study has shown that the tailoring of strategies for implementation to the specified needs of nurses helps to ensure that users are committed to the proposed change process.

The following key conclusions can be drawn from this project:

Evidence from Chapter Four<sup>13</sup> indicates that the ten most commonly reported barriers to the use of research in practice were:

- Research is overwhelming.
- Other staff are not supportive of change.
- Statistical analyses are not understandable.
- There is insufficient time in the job to implement new ideas.
- Results from research are not generalisable.
- There are inadequate facilities for the implementation of research findings.
- Relevant literature is not compiled in one place.
- The nurse does not have enough authority to change practice.
- The nurse feels unable to evaluate the quality of research.
- The nurse does not have time to read research.

Both Chapters Four and Five<sup>14</sup> indicate that practising nurses are both able and prepared to identify strategies which will promote the use of research in clinical practice. The four most important strategies identified by nurses for research implementation (detailed in Chapter Four, section 4.4.4.) were:

- education
- accessibility of information
- facilitation
- ensuring direct relevance to patient care

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<sup>13</sup> Chapter Four. Research in practice: An exploration of barriers and facilitators.

<sup>14</sup> Chapter Five. Exploring nurses views on the use of research in clinical practice.

When evaluating the effect of improving nurses' knowledge of continence care in a research study it was highlighted that recruiting nurses to take part in research is difficult. Such difficulties have been reported in other studies with other professional groups (Szonyi and Millard, 1994).

Chapter Six<sup>15</sup> showed that a user-friendly package of research information was effective in improving nurses' knowledge of urinary incontinence.

Chapter Seven<sup>16</sup> showed that the implementation of a multi-faceted tailored approach for the implementation of research evidence in clinical practice was successful in improving:

- nurses' knowledge and attitudes to urinary incontinence
- nurses' attitudes towards research
- nurses' documentation of continence issues in patient notes
- patient outcomes in terms of reduced number of wet episodes and reported severity of symptoms.

## **9.2 Implications of the research findings**

The current report recognises implications for the future in three key areas:

- implications for nursing practice
- implications for nurse education
- directions for future research

### **9.2.1 Implications for clinical practice**

Nursing should draw on the experiences of other domains, e.g. management and education, when determining what types of barriers may exist to research use.

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<sup>15</sup> Chapter Six. Evaluation of a clinical handbook for continence care.

<sup>16</sup> Chapter Seven. Implementing research findings in a clinical setting: a case study.

This study recommends that dissemination and implementation strategies should be developed using the experience and recommendations of service providers. Only by deferring to their experience of barriers and facilitators to research use in clinical practice will they be overcome.

Nurses are in an ideal position to recognise aspects of care where their practice lacks a research base. Mechanisms should exist by which they can shape future strategy for the development of implementation strategies in particular areas of need. Dissemination and implementation strategies should be based on locally defined need, as well as centrally generated policy.

Locally organised literature searching and appraisal skills workshops should be more widely available and targeted to the needs of the studentship. Such trans-trust agencies have already been developed, but usually in research active areas, e.g. Oxford, Trent.

The continued use of 'link' workers in specialist aspects of practice should be encouraged in order to cascade new information to colleagues in an organised way afforded by appropriate time allocation to this end.

Dissemination funds for research reports should not only include conference attendance and paper presentations, but funded study should be bound to disseminate findings in a measurable way to a relevant clinical setting. Funders should make evidence of impact on practice a condition of funding.

Researchers should not be set apart from clinical practice but should endeavour to maintain clinical credibility - either in a consultative role or as an educator. In addition, simple dissemination strategies such as research reports providing short 'implications for practice' fact sheets should be encouraged (Appendix S provides a short implications for practitioners sheet from this project).

Nurse managers should be required to facilitate the use of research. Whilst this is often the case it is rarely monitored in a measurable way.

### **9.2.2 Implications for education**

Education within a multi-disciplinary environment would offer useful insights for all members of the multi-disciplinary team. Such educational initiatives are currently being implemented in many regions with both government and regional support. However, such courses may simply target those already interested and motivated to pursue further information, and knowledge levels of those involved in patient care need to be assessed before specific education programmes are developed.

Within existing education programmes, undergraduate and postgraduate students could be encouraged to undertake innovative small scale studies focusing on implementing existing research evidence rather than small scale empirical studies.

The issue of nursing as a profession needs to be considered, if nursing is to be considered a profession does that imply that nurses should become routinely involved in research, becoming manufacturers of knowledge rather than retailers.

### **9.2.3 Directions for future research**

- It may be useful to explore nurses' attitudes to research since the introduction of Project 2000 nurse education and as more nurses pursue and complete undergraduate and post-graduate education. The present study found only a small number of nurses who had undergone such academic preparation. Perhaps in 5, 10 or perhaps 20 years we will see research evidence implemented swiftly and appropriately in clinical practice as these newly educated nurses have an impact on care provision. It would be useful to explore at regular intervals changes in attitudes to research and research implementation to determine the rate at which such changes are being achieved.
- The present study included users of research in the decision making process by allowing them to identify appropriate implementation strategies. Future research

initiatives should draw on the experiences of users of research to inform the research process.

- A further large scale study could be undertaken examining the educational preparation and attitudes to research of all members of the multi disciplinary team.
- A Randomised Controlled Trial and economic evaluation of a variety of implementation strategies could be undertaken to determine their effectiveness, determined by standardised patient outcome measures and economic viability.

Whilst the experience of the present study was that knowledge improved after use of the clinical handbook, long term follow up was not undertaken. Knowledge gained in the short term may not have been retained, assimilated and translated into practice changes. If large scale implementation studies are to be undertaken, the measurement of long term outcomes will be essential.



## References

Abbott, D. (1992). Objective assessment ensures improved diagnosis. Principles and Techniques of Urodynamics. *Professional Nurse* 739-742.

Agency for Health Care Policy and Research (AHCPR) (1992). Urinary Incontinence Guideline Panel, Urinary Incontinence in Adults: Clinical Practice Guidelines. Rockville, MD. Agency for Health Care Policy and Research, Public Health Service, U.S. Department of Health and Human Services.

Agency for Health Care Policy and Research (AHCPR) (1996). Urinary Incontinence Guideline Panel, Urinary Incontinence in Adults: Clinical Practice Guidelines. Update One. Rockville, MD. Agency for Health Care Policy and Research, Public Health Service, U.S. Department of Health and Human Services.

Akinsanya, J.A. (1988). Nursing Research - a demystifying process. *Nurse Education Today* 8:284-288.

Akinsanya, J.A. (1994). Making Research Useful to the Practising Nurse. *Journal of Advanced Nursing* 19:174-179.

Allen, D. (1985). Nursing Research and social control: alternative models of science that emphasise understanding and emancipation. *Image – The Journal of Nursing Scholarship*, 17(2): 58-64.

Altman, D.G. (1991). *Practical Statistics for Medical Research*. Chapman and Hall, London.

Anderson, J.T., Abrams, P., Blaivas, J.G., Stanton, S.L. (1988). The Standardisation of Terminology of lower urinary tract function. *Scandinavian Journal of Urology and Nephrology, Supplementum* 114: 5-19.

Andersson, K. (1988). Current Concepts in the Treatment of Disorders of Micturition. *Drugs* 35:477-494.

Appell, R.A., and Baum, N. (1992). Evaluation of Urinary Incontinence in the Elderly. *Journal of La State Medical Society* 144:11:517-522.

- Appleby, J., Walshe, K. and Ham, C. (1995). Acting on the evidence. National Association of Health Authorities and Trusts, Birmingham.
- Argyris, C. (1993). *Knowledge for Action. A guide to overcoming barriers to organisational change*. San Francisco: Jossey-Bass Publishers.
- Barer, D.H. (1989). Continence after stroke: useful predictor or goal of therapy? *Age and Ageing* 18:183-91.
- Barrett, J.A. (1992). Faecal Incontinence. In Roe B Ed. *Clinical Nursing Practice. the promotion and managment of continence*. Hemel Hempstead: Prentice Hall.
- Baum, N., Suarez, G., Appel, A. (1991). Urinary Incontinence. Not a 'normal' part of ageing. *Postgraduate Medicine* 90:2.
- Beisland, H.O., Fossberg, E. and Sander, S. (1981). Combined treatment with estriol and alpha-adrenergic stimulation in elderly female patients with urinary incontinence. A pilot. *Journal of Oslo City Hospital* 31 (3):39-42.
- Bennes, C., Barnick, C., Curner, A. and Cardoza, L. (1990). Normal urodynamic findings in symptomatic women-who to believe, the patient or the test? *Neurology and Urodynamics* 118-119.
- Bennis, W., Benne, K. and Chin, R. (1976). *The planning of change*. Third Edition. Toronto: Holt, Rinehart and Winston.
- Bergman, A. and Bader, K. (1990). Reliability of the patient's history in the diagnosis of urinary incontinence. *International Journal of Gynaecology and Obstetrics* 32 (3):255-259.
- Bernard, M.A. (1994). Urinary incontinence in elderly females. *Journal of Oklahoma State Medical Association* 87:217-224.
- Berrios, G. E. (1986). Urinary Incontinence and pathophysiology of the elderly with cognitive failure. *Gerontology* 32:119-124.

- Bhatia, N.N., Bergman, A. and Karram. M.M. (1989). Effects of oestrogen on urethral function in women with urinary incontinence. *American Journal of Obstetrics and Gynaecology* 160:176-181.
- Birchenall, P.D. (1991). Nurse Education Tomorrow Conference 1990. Preparing nurse teachers for their future role. *Nurse Education Today* 2:100-103.
- Birgersson-Bjurbrant, A.M., Hammar, V., Wilderfors, G. and Hallberg, I.R. (1993). Elderly Womens Feelings about being Urinary Incontinent, using napkins and being helped by nurses to change napkins. *Journal of Clinical Nursing* 2:165-171.
- Blannin, J. (1987). Men's Problems *Community Outlook* February 1987 27-29.
- Blowman, C., Pickles, C. and Emery, S. (1991). Prospective double-blind controlled trial of intensive physiotherapy with and without stimulation of the pelvic floor in the treatment of genuine stress incontinence. *Physiotherapy* 77 (10):661-664.
- Borrie, M.J. and Davidson, H.A. (1992). Incontinence in institutions: costs and contributing factors. *Canadian Medical Association Journal*, 147: 322-328.
- Brading, A.F. and Turner, W.H. (1994). The unstable bladder: towards a common mechanism. *British Journal of Urology* 73:3-8.
- Bradley, S. (1995). Methodological triangulation in healthcare research. *Nurse Researcher* 3(2):81-89.
- Brink, C.A. and Wells, T.A. (1986). Environmental support for geriatric incontinence. *Clinics in Geriatric Medicine* 2:829-839.
- Brink, C.A., Sampsel, C.M., Wells, T.J., Diokno, A.C. and Gillis, A. (1989). A digital test for pelvic muscle strength in older women with urinary incontinence. *Nursing Research* 38 (4): 196-199.
- Brocklehurst, J.C. and Dillane, J.B. (1966). Studies of the female bladder in old age: cystometrograms in non-institutionalised women *Gerontologia Clinica* 8:285-305.

Brocklehurst, J.C. (1972). Urinary infection and symptoms of dysuria in women aged 45-64 years: their relevance to similar findings in the elderly. *Age and Ageing*. 1:41-7.

Brocklehurst, J.C. (1978). Differential diagnosis of urinary incontinence. *Geriatrics*, April:36-9.

Brocklehurst, J.C. (1982). The ageing bladder. *Geriatric Medicine* 12:11-15.

Brocklehurst, J.C. (1984). Ageing, bladder function and incontinence. In Brocklehurst, J.C. (ed.). *Urology in the Elderly*, Edinburgh: Churchill Livingstone.

Brocklehurst, J.C., Andrews, K., Richards, B. and Laycock, P.J. (1985). Incidence and correlates of incontinence in stroke patients. *Journal of the American Geriatrics Society* 33:540-542.

Brocklehurst, J.C. (1990). Urinary Incontinence in Old Age: Helping the General Practitioner to make a Diagnosis. *Gerontology* 36 (supplement 2):3-7.

Brocklehurst, J.C. (1993). Urinary incontinence in the community-analysis of a Mori poll. *British Medical Journal* 306: 832-834.

Brookfield, S.D. (1986). *Understanding and facilitating adult learning: a comprehensive analysis of principles and effective practices*. Milton Keynes: Open University Press.

Bump, R.C., Hurt, W.G., Fantl, A. and Wyman, J.F. (1991). Assessment of Kegel pelvic muscle exercise performance after brief verbal instruction. *American Journal of Obstetrics and Gynaecology* 165,2:322-329.

Bump, R.C., Sugarman, H.J., Fantl, J.A. and McClish, D.K. (1992). Obesity and Lower Urinary Tract Function in Women: Effect of Surgically Induced Weight Loss. *American Journal of Obstetrics and Gynaecology* 167,2:392-399.

Burgio, K.L., Whitehead, W.E. and Engel, B.T. (1985). Urinary incontinence in the elderly. *Annals of internal medicine* 104:507-515.

Burgio, K.L., Robinson, J.C. and Engel, B.T. (1986). The role of biofeedback in Kegel exercise for stress urinary incontinence. *American Journal of Obstetrics and Gynaecology* 154:58-63.

Burgio, K.L. (1990). Behavioural training for stress and urge incontinence in the community. *Gerontology* 36;supp 2:27-34.

Burgio, K.L., Matthews, K.A. and Engel, B.T. (1991). Prevalence, incidence and correlated of urinary incontinence in healthy, middle-aged women. *Journal of Urology* 146:1255-1259.

Burgio, K.L., Ives, D.G., Locher, J.L., Arena, V.C. and Kuller, L.H. (1994). Treatment seeking for urinary incontinence in older adults. *Journal of the American Geriatrics Society* 42,208-212.

Burns, N. and Grove, S.K. (1993). *The practice of nursing research : conduct, critique, & utilization*. Second Edition. Philadelphia; London : Saunders Publishers.

Burns, P.A., Pranikoff, K., Nochajski, T.H., Hadley, E.C., Levy, K.J. and Ory, M.G. (1993). A comparison of effectiveness of biofeedback and pelvic muscle exercise treatment of stress incontinence in older community-dwelling women. *Journal of Gerontology* 48 (4) M167-M174.

Burton, J.R. (1984). Managing Urinary Incontinence-A Common Geriatric Problem. *Geriatrics* 39 (10):46-62.

Calman, K. (1994). The profession of medicine. *British Medical Journal* 309:1140-1143.

Camiah, S. (1997). Utilisation of nursing research in practice and application strategies to raise research awareness amongst nurse practitioners: a model for success. *Journal of Advanced Nursing* 26: 1193-1202.

Cammu, H., Van Nylen, M., Derde, M., DeBruyne, R. and Amy, J. (1991). Pelvic Physiotherapy in Genuine Stress Incontinence. *Urology* 38(4):332-337.

Campbell, A.J., Reinken, J. and McCosh, L. (1985). Incontinence in the elderly: prevalence and prognosis. *Age and Ageing* 14:65-70.

Campbell, D.T. and Stanley, J.C. (1966). *Experimental and Quasi-experimental designs for research*. Boston: Houghton Mifflin.

Caputo, R.M., Benson, J.T. and McClellan, E. (1993). Intravaginal maximal electrical stimulation in the treatment of urinary incontinence. *Journal of Reproductive Medicine* 38(9):667-671.

Cardoza, L.D., Abrams, P.H., Stanton, S.L. and Feneley, R.C.L. (1978). Idiopathic detrusor instability treated by biofeedback. *British Journal of Urology* 50:521-523.

Cardozo, L., Versi, E., Tapp, A. and Studd, J. (1986). Oestrogens and Urgency. Proceedings of the International Continence Society, Boston Mass 370-371.

Cardozo, L. (1991). Urinary Incontinence in Women: Have we anything new to offer? *British Medical Journal* 303:1453-7.

Cardozo, L. and Kelleher, C. (1994). Sex hormones and the female lower urinary tract. *Physiotherapy* 80 (3):135-138.

Carter, D.E. (1991). Quantitative Research. In Cormack DFS Ed. *The Research Process in Nursing*. Second Edition. Oxford: Blackwell Scientific Publications.

Cartwright, A. (1978). Professionals as responders: variations in and effects of response rates to questionnaires, 1961-77. *British Medical Journal* :1419-1421.

Castleden, C.M. and Duffin, H.M. (1981a). Guidelines For Controlling Urinary Incontinence Without Drugs Or Catheters. *Age and Ageing* 10:186-190.

Castleden, C.M., Duffin, H.M. and Asher, M.J. (1981b). Clinical and urodynamic studies in 100 elderly incontinent patients. *British Medical Journal* 282:1103-1105.

Castleden, C.M., Duffin, H.M. and Mitchell, E.P. (1984). The effect of physiotherapy on stress incontinence. *Age and Ageing* 13:235-237.

- Chamberlain, M.A. and Stowe, J. (1982). Bathing in hospital *British Medical Journal* 284:1693-1694.
- Chapple, C.R. and Christmas, T.J. (1990). *Urodynamics made easy*. Edinburgh: Churchill Livingstone.
- Cheater, F.M. (1990). *Urinary incontinence in hospital in-patients: a nursing perspective*. PhD thesis, University of Nottingham.
- Cheater, F.M. (1991). Elderly people: attitudes towards urinary incontinence. *Nursing Standard*. Mar 20-26;5(26):23-7.
- Cheater, F.M. (1992a). The Aetiology of Urinary Incontinence. In Roe, B ed. *Clinical Nursing Practice: The Promotion and Management of Continence*. Hemel Hempstead: Prentice Hall.
- Cheater, F.M. (1992b). Nurses' educational preparation and knowledge concerning continence promotion. *Journal of Advanced Nursing* 17, 328-338.
- Cheater, F.M. (1993). Retrospective document survey: identification, assessment and management of urinary incontinence in medical and care of the elderly wards. *Journal of Advanced Nursing* 18, 1734-1746.
- Church, S. and Lyne, P. (1994). Research based practice: some problems illustrated by the discussion of evidence concerning the use of a pressure-relieving device in nursing and midwifery. *Journal of Advanced Nursing* 19:513-518.
- Close, A. (1988). Patient education: a literature review. *Journal of Advanced Nursing* 13:203-213.
- Closs, S.J. and Cheater, F.M. (1994). Utilisation of nursing research: culture, interest and support. *Journal of Advanced Nursing*, 19:762-773.
- Closs, S.J. and Cheater, F.M. (1999). Evidence for nursing practice: a clarification of the issues. *Journal of Advanced Nursing* 30(1):10-17.



Cochrane Collaboration (1996). Issue Two. *Database on disk and CD-ROM*. London: BMJ Publishing.

Cole, A. (1996). Older and Wiser. *Nursing Times* 92(39):22-23.

Coleman, J.S., Katz, E, Menzel H (1966). *Medical Innovation: a diffusion study*. Indianapolis, U.S.A., Bobbs-Merrill.

Colling, J., Ouslander, J., Hadley, B.J., Eisch, J. and Campbell, E. (1992). The effects of patterned urge-response toileting (PURT) on urinary incontinence among nursing home residents. *Journal of the American Geriatrics Society* 40:135-141.

Collins, E.G. (1992). Increasing Practice-Based Research: Doctorally Prepared Clinic Nurse Specialists May Be the Answer. *Clinical Nurse Specialist* 6(4):196-199.

Consensus Conference (1989). Urinary Incontinence in Adults *Journal of the American Medical Association* 261:18:2685-2690.

Cormack, D.F.S. (1991) Ed. *The Research Process in Nursing*. Second Edition. Oxford: Blackwell Scientific Publications.

Coutts, L.C. and Hardy, L.K. (1985). *Teaching for Health*. Edinburgh: Churchill Livingstone.

Crane, J. (1985a). Using research in practice. Research utilisation-theoretical perspectives. *Western Journal of Nursing Research* 7:261-268.

Crane, J. (1985b). Using Research in Practice. Research utilisation – nursing models. *Western Journal of Nursing Research* 7:494-497.

Creighton, S.M. and Stanton, S.L. (1990). Caffeine: Does it Affect your Bladder? *British Journal of Urology* 66:613-614.

Culbert, P.A. and Kos, B.A. (1971). Ageing: considerations for health teaching. *Nursing Clinics of North America* 6(4):605-614.

Cutler, W.B., Friedmann, E., Felmet, K. and Genovese-Stone, E. (1992). Stress Urinary Incontinence: A Pervasive Problem Among Healthy Women. *Journal of Women's Health* 1(4):259-266.

Cutler, L. (1997). The problems inherent in promoting research-based practice and strategies by which they might be overcome. *Nursing in Critical Care* 2 (5):224-230.

Cutner, A. and Cardozo, L. (1990). Urinary incontinence: clinical features. *The Practitioner* 234:1018-1024.

Daly, J., McDonald, I. and Willis, E. (1992). Why don't you ask them? A qualitative research framework for investigating the diagnosis of cardiac normality. In Daly, J. McDonald, I. and Willis, E. Ed. *Researching health Care. Designs, dilemmas, disciplines*. London: Tavistock/Routledge.

Davis, DA., Thompson, M.A., Oxman, A.D. and Haynes, B. (1992). Evidence for the effectiveness of Continuing Medical Education (CME). *Journal of the American Medical Association* 268:1111-1117.

DeVellis, R.F. (1991). *Scale development. Theory and applications*. Applied social research methods series Volume 26. London: Sage Publications.

Department of Health and Social Security (DHSS) (1972). *Report of the Committee on Nursing* (The Briggs Report) London: HMSO.

Department of Health (DoH) (1991). *Research for Health: a research and development strategy for the NHS*. London: HMSO.

Department of Health (DoH) (1992). *The Patient's Charter*. London: HMSO.

Department of Health (DoH) (1993a). *Report of the Taskforce on the Strategy for Research in Nursing, Midwifery and Health Visiting*. London: HMSO.

Department of Health (DoH) (1993b). *A vision for the future*. London: HMSO.

Department of Health (DoH) (1996a). Promoting clinical effectiveness: a framework for action in and through the NHS. NHS Executive, Leeds.

Department of Health (DoH) (1996b). Research and Development: towards an evidence-based health service. London: HMSO.

Department of Health (DoH) (1997). The New NHS: Modern. Dependable. London: HMSO.

Department of Health (DoH) (1998). *A first Class Service: Quality in the new NHS*. London: HMSO.

Dimpfl, T., Hesse, U. and Schussler, B. (1992). Incidence and cause of postpartum urinary stress incontinence. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 43:29-33.

Diokno, A.C. (1988). The cause of urinary incontinence. *Topics in Geriatric Rehabilitation* 3:13-20.

Diokno, A.C., Brock, B.M., Brown, M.B. and Herzog, A.R. (1986). Prevalence of Urinary Incontinence and other Urological Symptoms in the Non-institutionalized Elderly. *The Journal of Urology* 136:1022-1025.

Diokno, A.C., Normolle, D.P., Brown, M.B., Herzog, A.R. (1990). Urodynamic tests for female geriatric urinary incontinence. *Urology* 36(5):431-439.

Dracup, K., Weinberg, S.L. (1983). Another case for nursing research. *Heart and Lung* :3.

Draper, J. (1996). Nursing development units; an opportunity for evaluation. *Journal of Advanced Nursing* 23:267-71.

Duffin, H. (1992). Assessment of Urinary Incontinence in Roe, B., ed. Clinical Nursing Practice. *The Promotion and Management of Continence*. Hemel Hempstead: Prentice Hall.

Duffy, L.M. (1990). Helping Caregivers Cope: Managing Urinary Incontinence Associated with Alzheimers Disease. *Journal of Enterostomy Therapy* 17:87-93.

Dunn, V., Crichton, N., Williams, K., Roe, B. and Seers, K. (1998). Using research for practice: UK experience of the BARRIERS scale. *Journal of Advanced Nursing* 27:1203-1210.

Dunn, W.N. (1983). Measuring knowledge use. *Knowledge: Creation, Diffusion, Utilisation* 5: 120-133.

Dwyer, P.L. and Teele, J.S. (1992). Prazosin: A Neglected Cause of Genuine Stress Incontinence. *Obstetrics and Gynaecology* 79(1):117-121.

Eardley, I., Kirby, R., Nagendram, C., Leeky, B., Youl, B., Chapple, C., Fowler, C. and MacDonald, W. (1989). Where are the lesions that cause neurogenic bladder in multiple sclerosis? *Neurology and Urodynamics* 4 (8) 310-311.

Effective Health Care Bulletin (EHCB) (1994). *Implementing Clinical Guidelines*. Nuffield Institute for Health, University of Leeds. Center for Health Economics. NHS Center for Reviews and Dissemination. Royal College of Physicians Number 8.

Elder, D.D. and Stephenson, T.P. (1980). An assessment of the Frewen regime in the treatment of detrusor dysfunction in females. *British Journal of Urology* 52:467-471.

Elia, G. and Bergman, A. (1993). Pelvic muscle exercises: When do they work? *Obstetrics and Gyneacology* 81:2:283-286

Engel, B.T., Burgio, L.D., McCormick, K.A., Hawkins, A.M., Scheve, A.S. and Leahy, E. (1990). Behavioural treatment of incontinence in the long term care setting. *Journal of the American Geriatrics Society* 38(3):361-363.

Epstein, S. and Jenike, M.A. (1990). Disabling Urinary Obsessions: An Uncommon Variant of Obsessive-Compulsive Disorder. *Psychosomatics* 31(4):450-452.

Ersser, S. and Tutton, E. (1991). *Primary Nursing in perspective*. London: Scutari Press.

Esa, A., Kiwamoto, H., Sugiyama, T., Park, Y.C., Kaneko, S. and Kurita, T. (1991). Functional Electrical stimulation in the management of incontinence: studies of urodynamics. *International Urology and Nephrology* 23 (2): 135-141.

Ewing, R., Bultitude, M.I. and Shuttleworth, K.E.D. (1983). Subtrigonal Phenol Injection Therapy for Incontinence in Female Patients with Multiple Sclerosis. *Lancet* June 11 1983:1304-1305

Fall, M., Ahlstrom, K., Carlsson, C.A., Ek, A., Erlandson, B.E., Frankenberg, S. and Mattiasson, A. (1986). Contelle: pelvic floor stimulation for female stress-urge incontinence. *Urology* 3:282-287.

Fantl, J.A., Cardozo, L. and McClish, D.K. (1994). Estrogen therapy in the management of post-menopausal women: a meta-analysis. First report of the Hormones and Urogenital therapy Committee. *Obstetrics and Gynecology* 83,1:12-18.

Fantl, J.A., Wyman, J.F., McClish, D.K., Karkino, S.W., Elswick, R.K. and Taylor, J.R. (1991). Efficacy of bladder training in older women with urinary incontinence. *Journal of the American Medical Association* 265 (5):609-613.

Faulkner, A. (1988). 'Too bad to mention'. *Nursing Times* 84(14): 70-72.

Fawcett, J.A. (1980). Declaration of Nursing Independence: The Relation of Theory and Research to Nursing Practice. *Journal of Nursing Administration* 10:36-39.

Feneley, R.C.L., Shepherd, A.M., Powell, P.H. and Blannin, J. (1979). Urinary Incontinence: Prevalence and Needs. *British Journal of Urology* 51:493-496.

Ferguson, K.L., McKey, P.L., Bishop, K.R., Kloen, P., Verheul, J.B. and Dougherty, M.C. (1990). Stress urinary incontinence: effect of pelvic muscle exercise. *Obstetrics and Gynaecology* 75 (4):671-675.

Fernie, G.R., Jewett, M.A.S., Autry, D., Holliday, P.J. and Zorzitto, M.L. (1983). Prevalence of geriatric urinary dysfunction in a chronic care hospital. *Can Med Assoc J* 128:1085-1086.

Field, P.A. and Morse, J.M. (1992). *Nursing research. The application of qualitative approaches*. London: Croom Helm.

Flanigan, J.C. (1954). The critical incident technique. *Psychological Bulletin* 51(4):327-357.

Foldspang, A., Mommsen, S., Lam, G.W. and Elving, L. (1992). Parity as a correlate of adult female urinary incontinence prevalence. *Journal of Epidemiology and Community Health* 46:595-600.

Fossberg, E., Sanders, S. and Beisland, H. (1981). Urinary incontinence in the elderly: a pilot study. *Scandinavian Journal of Urology and Nephrology* 60 (supp):51-3.

Fossberg, E., Sorensen, S., Ruutu, M., Bakke, A., Stien, R., Henriksson, L. and Kinn, A.C. (1990). Maximal Electrical Stimulation in the Treatment of Unstable Detrusor and Urge Incontinence. *Eur Urol* 18:120-123.

Foster, D.C. (1990). Geriatric Urinary Tract Dysfunction. *Current Opinion in Obstetrics and Gynaecology* 2:612-619

Fowler, C.J., van Kerrebroeck, P.E.V., Nordenbo, A. and Van Poppel, H. (1992). Treatment of lower urinary tract dysfunction in patients with multiple sclerosis. *Journal of Neurology, Neurosurgery, and Psychiatry* 55:986-989.

Fraelich, P.L. (1986). *A clinicians guide to the critique and utilisation of nursing research*. Norwalk: Appleton - Century Crofts.

Frazer, M.I., Haylen, B.T. and Sutherst, J.R. (1989). The severity of urinary incontinence in women. Comparison of subjective and abjective tests. *British Journal of Urology* 63:14-15.

Freeman, R. and Baxby, K. (1982). 'Hypnotherapy for incontinence caused by the unstable bladder'. *British Medical Journal* 284:1831-4.

Freemantle, N., Harvey, E., Grilli, R., Oxman, A., Bero, L. and Grimshaw, J. (1995). The effectiveness of printed educational materials in changing the behaviour of health care professionals. University of York.

Frewen, W. (1978). 'An objective assessment of the unstable bladder of psychosomatic origin' *British Journal of Urology* 50:246-9

Frewen, W.K. (1980). The management of urgency and frequency of micturition. *British Journal of Urology* 52 (5):367-369.

Funk, S.G., Tornquist, E.M. and Champagne, M.T. (1989a). A Model for Improving the dissemination of Nursing Research. *Western Journal of Nursing Research* 11(3):361-367.

Funk, S.G., Tornquist, E.M., Champagne, M.T. (1989b). Application and Evaluation of the Dissemination Model. *Western Journal of Nursing Research* 11(4):486-491.

Funk, S.G., Champagne, M.T., Wiese, R.A. and Tornquist, E.M. (1991a). Barriers: The Barriers to Research Utilization Scale. *Applied Nursing Research* 4:39-45.

Funk, S.G., Champagne, M.T., Weise, R.A. and Tornquist, E.M. (1991b). Barriers to using research findings in practice: The clinician's perspective. *Applied Nursing Research* 4: 90-95.

Getliffe, K. (1998). Quantitative Research Designs. In Roe, B., and Webb, C. Ed. *Research and Development in Nursing Practice*. London: Whurr Publishers Ltd.

Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., Trow, M. (1994). *The new production of knowledge*. London: Sage Publications.

Gilja, I., Radej, M., Kovacic, M., Parazajderj, J. (1984). Conservative treatment of female stress incontinence with Imipramine. *Journal of Urology* 132 (5):909-911.

Goode, C.J., Lovett, M.K. and Hayes, A. (1987). Use of research based knowledge in Clinical Practice. *Journal of Nursing Administration* 17:11-18.

Gordon, H. and Logue, M. (1985). Perineal muscle function after childbirth. *Lancet*, July 123-125.

Gordon, M. (1982). *Manual of Nursing Diagnosis*. Maidenhead: McGraw-Hill

Gott, M.A. (1981). Creative climate. *Nursing Mirror* :44-45.

Gould, D. (1986). Pressure sore prevention and treatment: an example of nurses' failure to implement research findings. *Journal of Advanced Nursing* 11:389-394.

Griffiths, D.J., McCracken, P.N. and Harrison, G.M. (1991). Incontinence in the elderly: Objective demonstration and quantitative assessment. *British Journal of Urology* 67, 467-471.

Griffiths, D.J., McCracken, P.N., Harrison, G.M., Gormley, E., Moore, K., Hooper, R., McEwa, A.B.J. and Triscott, J. (1994). Cerebral aetiology of urinary urge incontinence in elderly people. *Age and Ageing* 23:246-250.

Grimby, A., Milsom, A. and Mollander, U. (1993). The influence of urinary incontinence on the quality of life of elderly women. *Age and Ageing* 22, 82-89.

Habermas J (1983). Knowledge and human interest. Heinemann, London.

Hadley, E.C. (1986). Bladder training and related therapies for urinary incontinence in older people. *Journal of the American Medical Association* 256 (3) 372-9.

Hahn, I., Milsom, I., Fall, M. and Ekelund, P. (1993). Long term results of pelvic floor training in female stress urinary incontinence. *British Journal of Urology* 72:421-427.

Haines, A. and Jones, R. (1994). Implementing findings of research. *British Medical Journal* 297:6657,1181.



Hammersley, M. and Atkinson, P. (1983). *Ethnography: Principles in Practice*, University Press, Cambridge.

Harrison, L.L, and Novak, D. (1988). Evaluation of a gerontological nursing continuing education programme: effect on nurses' knowledge and attitudes and on patients' perceptions and satisfaction. *Journal of Advanced Nursing* 13:684-692.

Havelock, R.G., Guskin, A., Frohman, M., Havelock, M., Hill, M. and Huber, J. (1969). *Planning for innovation through dissemination and utilisation of knowledge*. University of Michigan, Ann Arbor, Michigan: Published by the Institute of Social Research.

Havelock, R.G. and Havelock, M. (1973). *Training for change agents*. University of Michigan, Ann Arbor: Center for research on utilisation of scientific knowledge.

Hellstrom, L., Ekelund, P., Milsom, I. and Mellstrom, D. (1990). The Prevalence of Urinary Incontinence and Use of Incontinence Aids in 85-year-old Men and Women. *Age and Ageing* 19:383-389.

Henderson, V. (1979). Preserving the essence of nursing in a technological age. *Nursing Times* 75:2056-2058.

Herzog, A.R. and Fultz, N.H. (1990a). Prevalence and Incidence of urinary incontinence in community-dwelling populations. *Journal of the American Geriatrics Society* 38:273-81.

Herzog, A.R., Diokno, A.C., Brown, M.B., Normolle, D.P. and Brock, B.M. (1990b). Two-Year Incidence, Remission, and Change Patterns of Urinary Incontinence in Noninstitutionalized Older Adults. *Journal of Gerontology* 45(2):67-74.

Hewison, A. and Wildman, S. (1996). The theory-practice gap in nursing: a new dimension. *Journal of Advanced Nursing* 24:754-761.

- Hicks, C. (1994). Bridging the gap between research and practice: an assessment of the value of a study day in developing critical research reading skills in midwives. *Midwifery* 10:18-25.
- Hicks, C. and Hennessey, D. (1997). Mixed messages in nursing research: their contribution to the persisting hiatus between evidence and practice. *Journal of Advanced Nursing* 25:595-601.
- Hicks, C., Hennessey, D., Cooper, J. and Barwell, F. (1996). Investigating attitudes to research in primary care teams. *Journal of Advanced Nursing* 24:1033-1041.
- Hilton, P. (1988). Urinary incontinence during sexual intercourse: a common, but rarely volunteered symptom. *British Journal of Obstetrics and Gynaecology* 95:377-81.
- Hilton, P. and Stanton, S.L. (1981). Algorithmic Method for Assessing Urinary Incontinence in Elderly Women *British Medical Journal* 282:940-942.
- Hockey, L. (1987). *Issues in the communications of Nursing Research, recent advances in nursing. Current Issues*. Edinburgh: Churchill Livingstone.
- Holst, K. and Wilson, P.D. (1988). The prevalence of female urinary incontinence and reasons for not seeking treatment. *New Zealand Medical Journal* 101:756-758.
- Hopps, L.C. (1994). The development of research in nursing in the United Kingdom. *Journal of Clinical Nursing* 3:199-204.
- Horsley, J.A., Crane, J. and Bingle, J. (1978). Research utilisation as an organisational process. *Journal of Nursing Administration* 8 (7): 4-6.
- Horsley, J.A., Crane, J., Crabtree, K. and Wood, D.J. (1983a). *Using Research to Improve Nursing Practice: A Guide*. New York: Grune and Stratton.
- Horsley, J. (1983b). Using Research in Practice: The Current Context. *Western Journal of Nursing Research* 5(3):135-139.

- Houston, K.A. (1993). Incontinence and the Older Woman. *Clinics in Geriatric Medicine* 9,1:157-171.
- Hu, T.W., Igou, J.F., Kaltreider, D.L., Yu, L.C., Rohner, T.J., Denis, P.G., Craighead, W.E., Hadley, E.C. and Ory, M.G. (1989). A clinical trial of behavioural therapy to reduce urinary incontinence in nursing homes. *Journal of the American Medical Association* 261 (18): 2656-2662.
- Hunt, J. (1980). Indicators for nursing practice: the use of research findings. *Journal of Advanced Nursing* :189-194.
- Hunt, J. (1981). Indicators for nursing practice: the use of research findings. *Journal of Advanced Nursing* 6:189-194.
- Hunt, M. (1987). The process of translating research findings into nursing practice. *Journal of Advanced Nursing* 12:101-110.
- Hyland, N. (1991). Training for Success. *Nursing Times* 87 (32):61-62.
- Isaacs, B. and Walkey, F.A. (1964). A Survey of Incontinence in Elderly Hospital Patients. *Geront. Clin.* 6:367-376.
- Jacobsen, L. (1974). Illness and Human sexuality *Nursing Outlook* 22 (1).
- James, E. (1984). Ambulatory monitoring in urodynamics in Mundy, A., Stephenson, T. and Wein, A. *Urodynamics: Principles, Practice and Application*. Edinburgh: Churchill Livingstone.
- James, E.D., Flack, F.C., Caldwell, K.P.S. and Martin, M.R. (1971). Continuous measurement of urine loss and frequency in incontinent patients. *British Journal of Urology* 43:233-237.
- Jarvis, G.J. and Miller, D.R. (1980). Controlled trial of bladder drill for detrusor instability. *British Medical Journal* 281: 1322-1323.
- Jarvis, G.J. (1981). A controlled trial of bladder drill and drug therapy in the managment of detrusor instability. *British Journal of Urology* 53 (6):565-566.

- Jarvis, G.J. (1982). Bladder drill for the treatment of enuresis in adults. *British Journal of Urology* 54:118-119.
- Jensen, J.K., Nielsen, F.R. and Ostergard, D.R. (1994). The role of patient history in the diagnosis of urinary incontinence. *Obstetrics and Gynaecology* 83 (5): 904-10.
- Jeter, K.F. and Wagner, D.B. (1990). Incontinence in the American home: a survey of 36,500 people. *Journal of the American Geriatrics Society* 38 (3): 379-83.
- Jolleys, J.V. (1988). Reported Prevalence of urinary incontinence in women in a general practice. *British Medical Journal* 296:1300-1302.
- Jones, E.G. and Kegel, A.H. (1952). Treatment of urinary stress incontinence. *Surg Gynecol Obstetrica* 94:179-188.
- Ju, C.C., Swan, L.K., Merriman, A., Choon, T.E. and Viegas, O. (1991). Urinary Incontinence among the Elderly People of Singapore. *Age and Ageing* 20:262-266.
- Kassis, A. and Schick, E. (1993). Frequency volume chart pattern in the healthy female population. *British Journal of Urology* 72 (5Pt2):708-710.
- Kegel, A.H. (1951). Physiologic therapy for urinary stress incontinence. *Journal of the American Medical Association*, 146 (10): 915-17
- Kelly, M.P. (1987). Managing radical surgery: notes from the patients viewpoint. *Gut* 28 (1):81-87.
- Kennedy, A.P. (1984). Nursing and the incontinent patient in Brocklehurst J C (ed) *Urology in the Elderly*. Edinburgh: Churchill Livingstone 127-43
- Kennedy, K.L. and Steidle, C.P. (1991). Achieving a state of urinary continence for residents of nursing facilities, Part 1: The history of physical examination. *Ostomy Wound Managment* 35:72-77.
- Kennedy, A.P. (1992) Bladder re-education for the promotion of continence. In Roe, B. (ed) *Clinical Nursing Practice: The promotion and management of continence* 77-94. Hemel Hempstead: Prentice Hall

Ketefian, S. (1975). Application of selected nursing research findings into nursing practice. *Nursing Research* 24:89-92.

King, D., Barnard, K.E. and Hoehn, R. (1981). Disseminating the results of nursing research. *Nursing Outlook* 29 (3):164-169.

Kirchoff, K. (1982). Using research in practice: Should staff nurses be expected to use research? *Western Journal of Nursing Research* 5:245-247.

Kirchoff, K.T. (1983). Using Research in Practice: Should Staff Nurses Be Expected to Use Research? *Western Journal of Nursing Research* 5(3):245-247.

Kitson, A. and Currie, L. (1996). Clinical practice development and research activities in four district health authorities. *Journal of Clinical Nursing* 5:41-51.

Knafl, K.A., Bevis, M.E. and Kirchhoff, K.T. (1987). Role development in an Applied Discipline: Clinical Nurse Researchers. *Current Research on Occupations and Professions* 4:69-86.

Kok, A.L.M., Voorhorst, F.J., Burger, C.W., Van Houten, P., Kenemans, P. and Janssens, J. (1992). Urinary and Faecal Incontinence in Community-residing Elderly Women. *Age and Ageing* 21:211-215.

Kornhuber, H.H. and Shutz, A. (1990). Efficient Treatment of Neurogenic Bladder Disorders in Multiple Sclerosis with Initial Intermittent Catheterisation and Ultrasound-Controlled Training. *European Neurology* 30:260-267.

Krathwohl, D.K., Bloom, B.S. and Masia, B.B. (1965). *Taxonomy of educational objectives. Handbook II, affective domain*. New York: David McKay.

Kreuger, J.C., Nelson, A.H. and Wolanin, M.O. (1978). *Nursing Research: development, collaboration and utilisation*. Germantown: Aspen Systems.

Lacey, E.A. (1994). Research utilisation in practice – a pilot study. *Journal of Advanced Nursing* 19:987-995.

Lagace, E.A., Hansen, W. and Hickner, J.M. (1993). Prevalence of severity of urinary incontinence in ambulatory adults: a UPRNet study. *Journal of Family Practice* 36 (6):610-614.

Lagro-Janssen, A.L.M., Debruyne, F.M.G. and Van Weel, C. (1991a). Value of the patients case history in diagnosing urinary incontinence in general practice. *British Journal of Urology* 67:569-572.

Lagro-Janssen, T.L.M., Debruyne, F.M.J., Smits, A.J.A. and Van Weel, C. (1991b). Controlled trial of pelvic floor exercises in the treatment of urinary stress incontinence in general practise. *British Journal of General Practice* 41;445-449.

Last, J.M. (1989). Making the most of research. *World Health Forum* 10:32-36.

Laudan, R. Ed. (1984). *The nature of technological knowledge: Are models of scientific change relevant?* Dordrecht: D. Reidel Publishing Company.

Laycock, J. (1992a). Pelvic floor re-education for the promotion of continence. In Roe, B. ed. (1992). *Clinical nursing practice, the promotion and management of continence*. Hemel Hempstead: Prentice Hall.

Laycock, J. (1992b). *Assessment of treatment of pelvic floor dysfunction*. Unpublished PhD thesis. University of Bradford.

Le May, A. (1999). Knowledge for dissemination and utilisation. In Mulhall, A and Le May, A. Ed. *Nursing Research. Dissemination and Implementation*. London: Churchill Livingstone.

Le May, A., Mulhall, A. and Alexander, C. (1998). Bridging the research-practice gap: exploring the research cultures of practitioners and managers. *Journal of Advanced Nursing* 28(2):428-437.

LeCoutour, X., Jung-Faerber, S., Klein, P. and Renaud, R. (1990). Female urinary incontinence: comparative value of history and urodynamic investigations. *European Journal of Obstetrics and Gynaecology and Reproductive Biology* 37:279-86.

Lee, K.S., Owen, R.E., Choo, P.W.J. and Jayaratnam, F.J. (1991). Urinary Incontinence in the Elderly. *Singapore Medical Journal* 32,161-163.

Lelean, S. (1982). The implementation of research findings into nursing practice. *International Journal of Nursing Studies* 19,4:223-230.

Lewis, B.V. (1993). Diagnostic dilatation and curettage in young women should be replaced by outpatient endometrial biopsy. *British Medical Journal* 306:225-226.

Lippitt, R., Watson, J. and Westley, B. (1958). *The dynamics of planned change*. New York: Harcourt Brace, Jovanovich.

Lomas, J., Anderson, G.M., Domnick-Pierre, K., Vayda, E., Enkin, M.W. and Hannah, W.J. (1989). Do Practice Guidelines Guide Practice (The effect of a consensus statement on the practice of physicians). *The New England Journal Of Medicine* 321(19):1306-1311.

Lomas, J., Enkin, M., Anderson, G.M., Hannah, W., Valda, E. and Singer, J. (1991). Opinion Leaders vs Audit and Feedback to Implement Practice Guidelines. *Journal of the American Medical Association* 265(17):2202-2207.

Lomas, J. (1993). Diffusion, dissemination and implementation: Who should do what? *Annals of the New York Academy of Science* 703:226-237.

Lomas, J. (1994). Medicine in context: a neglected perspective in medical education. *Academic Medicine* 69 (10suppl):S95-101.

Luckenbill-Brett, J.L. (1987). Use of Nursing Practice Research Findings. *Nursing Research* 36(6):344-349.

Luker, K. and Caress, A. (1989). Rethinking Patient Education. *Journal of Advanced Nursing* 14:711-718.

Luker, K. (1996). Research and the configuration of nursing services. *Journal of Clinical Nursing* 6 (4): 259-68.

- Lynn, M.R. (1989). Research in Practice: No Individual's Responsibility. *Journal of Pediatric Nursing* 4(5):374-376.
- Macaulay, A.J., Stern, R.S., Holmes, D.M. and Stanton, S.L. (1987). Micturition and the mind: psychological factors in the aetiology and treatment of urinary symptoms in women. *British Medical Journal* 294:540-543.
- Macaulay, A.J., Stern, R.S. and Stanton, S.L. (1991). Psychological Aspects of 211 Female Patients Attending a Urodynamic Unit. *Journal of Psychosomatic Research* 35(1):1-10.
- MacGuire, J.M. (1990). Putting nursing research findings into practice: research utilization as an aspect of the management of change. *Journal of Advanced Nursing* 15:614-620.
- MacMahon, A. (1998). Developing practice through research. In Roe B, Webb C ed. *Research and Development in clinical nursing practice*. London: Whurr publishers Ltd.
- Mahady, I.W. and Begg, B.M. (1981). Long term symptomatic and cystometric cure of the urge incontinence syndrome using a technique of bladder re-education. *British Journal of Obstetrics and Gynaecology* 88: 1038-1043.
- Malone-Lee, J. (1989). Urodynamic measurement and urinary incontinence in the elderly. Geriatric workshop on Incontinence. *Geriatric Medicine* 4-9 Kabi Vitrum
- Malone-Lee, J. (1994). Recent developments in urinary incontinence in late life. *Physiotherapy* 80 (3): 133-134.
- Mantle, J. and Versi, E. (1991). Physiotherapy for stress urinary incontinence: A National survey. *British Medical Journal* 302:753-755.
- Maslow, A.H. (1968). *Toward a psychology of being*. Second Edition. London: Van Nostrand Reinhold.
- Mausner, J.S. and Bahn, A.K. (1974). *Epidemiology: An introductory text*. Philadelphia: Saunders.



McCormick, K.A., Engel, B.J., Burgio, L.K. and Burgio, L.D. (1985). Comparative characteristics of incontinent patients in out patient day care and in-patient environments. *Gerontologist* 25 (supp 6) 247.

McDowell, B.J., Burgio, K.L., Dombrowski, M., Locher, J.L. and Rodriguez, E. (1992). An interdisciplinary approach to the assessment and behavioural treatment of urinary incontinence in geriatric out-patients. *Journal of the American Geriatrics Society*. 40 (4):370-374.

McGrother, C., Castleden, C.M., Duffin, H.M. and Clarke, M.A. (1987). Profile Of Disordered Micturition In The Elderly At Home. *Age and Ageing* 16(2):105-110.

McGrother, C., Jagger, C., Clarke, M., Castleden, C.M. (1990). Handicaps Associated with Incontinence: Implications for Management. *Journal of Epidemiology and Community Health* 44:246-248.

McInernay, P., Vanner, T., Powell, C. and Stephenson, T. (1990). Ambulatory Urodynamics. *Neurology and Urodynamics* 9 (4) 381-382.

Mead, P. (2000). Clinical guidelines: promoting clinical effectiveness or a professional minefield? *Journal of Advanced Nursing* 31(1):110-116.

Menon, E.B. and Tan, E.S. (1992). Bladder training in patients with spinal cord injury. *Urology* 40(5): 425-429.

Meyer, S., Dhenin, T., Schmidt, N. and DeGrandi, P. (1992). Subjective and objective effects of intravaginal electrical myostimulation and biofeedback in patients with genuine stress urinary incontinence. *British Journal of Urology* 69:584-588.

Miles, A. (1995). Evidence Based Medicine. *British Medical Journal* 311 (6999):258-259.

Miles, M.B. and Huberman, A.M. (1994). *Qualitative data analysis*. London. Sage Publications.

- Miller, J.R. and Messenger, S.R. (1978). Obstacles to applying nursing research findings. *American Journal of Nursing* 78:632-634.
- Milne, R. (1995). Piloting short workshops on the critical appraisal of reviews. *Health Trends* 27(4):120-123.
- Mitteness, L.S. (1987). The management of urinary incontinence by community living elderly. *Gerontologist* 27:185.
- Mittman, B.S., Tonesk, X. and Jacobsen, P.D. (1992). Implementing clinical practice guidelines: social influence strategies and practitioner behaviour change. *Quality Review Bulletin* 18 (12):413-422.
- Mohide, E.A., Pringle, D.M., Robertson, D. and Chambers, L.W. (1988). Prevalence of urinary incontinence in patients receiving home care services. *Canadian Medical Association Journal* 139:953-956.
- Molander, U. (1993). Urinary incontinence and related urogenital symptoms in elderly women. *Acta Obstetricia et Gynecologica Scandanavica* 72:5-22.
- Moody, L.E., Wilson, M.E., Smyth, K., Schwartz, R., Tittle, M. and Van Cott, M.L. (1988). Analysis of a Decade of Nursing Practice Research: 1977-1986. *Nursing Research* 37(6):374-379.
- Moody, M. (1987). Tissue Viability: Illuminating Research. *Nursing Times* 83(39):62.
- Moody, M. (1990). *Incontinence: patient problems and nursing care*. Oxford: Heinemann.
- Morgan, M., Calnan, M. and Manning, N. (1985). *Sociological Approaches to Health and Medicine*. London: Croom Helm.
- Morse, J.M. (1991). *Qualitative Nursing Research. A contemporary dialogue*. London. Sage Publications.

- Mouritsen, L., Frimodt-Moller, C. and Moller, M. (1991). Long term effect of pelvic floor exercises on female urinary incontinence. *British Journal of Urology* 68:32-37.
- Mulhall, A. (1997). Nursing Research: Our world not theirs? *Journal of Advanced Nursing* 25:969-976.
- Mulhall, A. (1998). Methods of data collection for quantitative research. In Roe, B. and Webb, C. Ed. *Research and development in nursing practice*. London: Whurr Publishers Ltd.
- Mulrow, C. (1987). The medical review article: state of the science. *Annals of Internal Medicine* 106:485-488.
- Mundy, A.R., Stephenson, T. and Wein, A. (1984). *Urodynamics; Principles, practice and application*. Edinburgh: Churchill Livingstone.
- Myco, F. (1981). The implementation of nursing research to the nursing profession in Northern Ireland. *Journal of Advanced Nursing* 6,1:51-58.
- Naylor, C.D. (1995). Grey zones of clinical practice: some limits to evidence based medicine. *The Lancet* 345:840-842.
- Newman, D.K., Lynch, K., Smith, D.A. and Cell, P. (1991). Restoring Urinary Continence. *American Journal of Nursing*, January 1991.
- NHS Centre for Reviews and Dissemination (University of York). (1999). Getting evidence into practice. *Effective Health Care* 5(1):1-16
- NHS Executive (1996). *Promoting clinical excellence: a framework for action in and through the NHS*. Leeds: Department of Health.
- Nilsson Kajermo, K., Nordström, G., Krusebrandt, Å. and Björvell, H. (1998). Barriers to and facilitators of research utilization, as perceived by a group of registered nurses in Sweden. *Journal of Advanced Nursing* 27:798-807.

- Norbeck, J.S., Chafetz, L., Skodel-Wilson, H. and Weiss, S.J. (1991). Social support needs of family care givers of psychiatric patients from three age groups. *Nursing Research* 40:208-213.
- Norman, I.J., Redfern, S.J., Tomalin, D.A. and Oliver, S. (1992). Developing Flanagan's critical incident technique to elicit indicators of high and low quality nursing care from patients and their nurses. *Journal of Advanced Nursing* 17:590-600.
- Norton, C. (1980). 'Assessing Incontinence'. *Nursing* 1 (18) 789-91.
- Norton, C. (1986). *Nursing for Continence*. Beaconsfield: Beaconsfield Publishing
- Norton, C. (1992). Incontinence in Old Age. *Nursing the Elderly* 4:4.
- Norton, P.A., MacDonald, L.D., Sedgwick, P.M. and Stanton, S.L. (1988). Distress and delay associated with urinary incontinence, frequency and urgency in women. *British Medical Journal* 297:1187-1189.
- O'Brien, J., Austin, M., Sethi, P. and O'Boyle, P. (1991). Urinary incontinence: Prevalence, need for treatment and effectiveness of intervention by nurse. *British Medical Journal* 303:1308-1312.
- O'Donnell, P.D. and Doyle, R. (1991). Biofeedback therapy technique for treatment of urinary incontinence. *Urology* 37 (5):432-436.
- O'Donnell, B.F., Drachman, D.A., Barnes, H.J., Peterson, K.E., Swearer, J.M. and Lew, R.A. (1992). Incontinence and troublesome behaviours predict institutionalisation in Dementia. *Journal of Geriatric Psychiatry and Neurology* 5,1:45-52.
- O'Flynn, K.J., Murphy, R. and Thomas, D.G. (1992). Neurogenic Bladder Dysfunction in Lumbar Invertebral Disc Prolapse. *British Journal of Urology* 69, 38-40.
- Oppenheim, A.N. (1992). *Questionnaire Design, Interviewing and Attitude Measurement*. New edition. London:Pinter Publishers.

Ory, M.G., Wyman, J.F. and Yu, L. (1986). Psychosocial factors in urinary incontinence. *Clinics in Geriatric Medicine* 2:657-671.

Ouslander, J.G., Kane, R.L. and Abrass, I.B. (1982). Urinary incontinence in elderly nursing home patients. *Journal of the American Medical Association*. 248:1194-1198.

Ouslander, J.G. (1986). A diagnostic evaluation of geriatric urinary incontinence. *Clinics in Geriatric Medicine*. 2:715-727.

Ouslander, J.G. (1990). Incontinence among elderly community dwelling dementia patients characteristics, management and impact on care givers. *Journal of the American Geriatrics Society* 38:440-445.

Ouslander, J.G. and Abelson, S. (1990). Perceptions of urinary incontinence among elderly outpatients. *Gerontologist* 30 (3):369-372.

Ouslander, J.G. (1991). Urinary Incontinence in the geriatric population. *Nippon-Ronan-Igakkai-Zasshi* 28,4:484-92.

Ouslander, J.G., Palmer, M.H., Rovner, B.W. and German, P.S. (1993). Urinary Incontinence in Nursing Homes: incidence, remission and associated factors. *Journal of the American Geriatrics Society*, 38, 440-445.

Oxford English Dictionary (1984). Wrotham, England: Wllm. Collins Sons and Co Ltd.

Oxman, A.D., Cook, D.J. and Guyatt, G.H. (1994). Users' Guides to the Medical Literature. VI. How to Use an Overview. *Journal of the American Medical Association* 272(17):1367-1371.

Palliard, M. and Resnick, N. (1984). Natural history of nonsocomial urinary incontinence. *Gerontologist* 24:212.

Palmer, M.H. (1990). Urinary Incontinence. *Nursing Clinics of North America* 25,4:919-934.

- Peattie, A.B., Plevnik, S. and Stanton, S.L. (1988). Vaginal cones: A conservative method of treating genuine stress incontinence. *British Journal of Obstetrics and Gynaecology* 95:1049-1053.
- Peckham, M. (1994). A scientific basis for the National Health Service. *Journal of Medical Engineering and Technology* 18 (4):134-137.
- Pengelly, A.W. and Booth, C.M. (1980). A prospective trial of bladder training as treatment for detrusor instability. *British Journal of Urology* 52:463-466.
- Perkins, E.R. (1992). Teaching research to nurses: issues for tutor training. *Nurse Education Today* 12:252-257.
- Perry, S. (1993). *Living with multiple sclerosis. Personal accounts of coping and adaptation*. Aldershot: Avebury, Ashgate Publishing Limited.
- Plevnik, S. (1985). New method for testing and strengthening pelvic floor muscles. Proceedings, International Continence Society (London) 1985 267-268.
- Plevnik, S., Jarez, J. and Vrtacnik, P. (1986). Short term electrical stimulation: home treatment of urinary incontinence. *World Journal of Urology* 4:24-26.
- Polit, D.F. and Hungler, B.P. (1991) *Nursing Research. Principles and Methods* Fourth Edition. Philadelphia: J B Lippincott.
- Pope, C. and Mays, N. (1993). Opening the black box: an encounter in the corridors of health services research. *British Medical Journal* 306:315-318.
- Pope, C. and Mays, N. (1995). Reaching the parts other methods cannot reach: an introduction to qualitative methods in health and health services research. *British Medical Journal* 311:42-45.
- Redman, B.K. (1984). *The process of patient education* (5<sup>th</sup> Edition). St Louis: CV Mosby.
- Rekers, H., Drogendijk, A.C., Valkenburg, H. and Riphagen, F. (1992). Urinary incontinence in women from 35 to 79 years of age: prevalence and consequences.

*European Journal of Obstetrics, Gynaecology and Reproductive Biology* 43:229-234.

Resnick, N. (1990). Non invasive diagnosis of the patient with complex incontinence. *International Journal of Experimental and Clinical Gerontology* 8:18.

Resnick, N.M. and Yalla, S.V. (1985). Management of Urinary Incontinence in the Elderly. *The New England Journal Of Medicine* 313,13:800-805.

Ritch, A. (1989). The use of oestrogen in incontinence in the elderly. *Geriatric Medicine: Geriatric Workshop on Incontinence, Measuring and Managing Incontinence*, February (suppl.) 23-25.

Roberts, A. (1989). Systems of Life:Urinary Incontinence *Nursing Times* 85,15:55-58.

Robinson, J.M. (1984). Evaluation of methods for assessment of bladder and urethral function. In Brocklehurst JC Ed. *Urology in the Elderly*. New York: Churchill Livingstone.

Robinson, K. and Vaughan, B. (1992). *Knowledge for nursing practice*. Oxford: Butterworth-Heinemann Ltd.

Roe, B.H. and Brocklehurst, J.C. (1987). Study of patients with indwelling catheters. *Journal of Advanced Nursing* 19 (12):713-718.

Roe, B.H. (1989). Use of bladder washouts: a study of nurses recommendations. *Journal of Advanced Nursing* 14, 494-500.

Roe, B.H. (1992) Ed *Clinical Nursing Practice. The promotion and management of continence*. London: Prentice Hall.

Roe, B.H. and Luker, K. (1992). Study of the nursing managment of patients with leg ulcers in the community. Department of Nursing, University of Liverpool.

Roe, B. (1993a). Catheter associated urinary tract infection: A Review. *Journal of Clinical Nursing* 2:197-203.

Roe, B.H., Luker, K.A., Cullum, N.A., Griffiths, J.M. and Kenrick, M. (1993b). Assessment, prevention and monitoring of chronic leg ulcers in the community: a report of a survey. *Journal of Clinical Nursing* 2, 299-306.

Roe, B.H., Griffiths, J.M., Kenrick, M., Cullum, N.A. and Hutton, J.L. (1994). Nursing Treatment of patients with chronic leg ulcers in the community. *Journal of Clinical Nursing* 3, 159-168.

Roe, B.H. and Williams, K.S. (1994). *Clinical Handbook for Continence Care*. London: Scutari Press.

Roe, B., Wilson, K., Doll, H. and Brooks, P. (1996). An evaluation of health interventions by primary health care teams and continence advisory services on patient outcomes related to incontinence. Health Services Research Unit, University of Oxford.

Roe, B., Williams, K. and Palmer, M. (1999). *Bladder training for urinary urge incontinence*. Cochrane Review, In: The Cochrane Library, Issue 4 1999. Oxford: Update Software.

Rogers, E.M. (1962). *Diffusion of Innovations*. New York: Free Press.

Rogers, E.M. (1995). *Diffusion of Innovations*, 4<sup>th</sup> Edition. New York: Free Press.

Rogers, S. (1998). The dissemination and utilisation of research. In Roe, B. and Webb, C. ed. *Research and Development in Clinical Nursing Practice*. London: Whurr Publishers Ltd, page 247-270.

Rooney, V. (1989). Bladder re-education and timed voiding programmes. *Geriatric Medicine: Geriatric Workshop on Incontinence, Measuring and Managing Incontinence*, February (suppl.) 26-27.

Ross, F. (1985). Uneasy bedfellows. *Nursing Times* 81(44):38-39.

Sackett, D.L., Rosenberg, W.M., Muir Grey, J.A., Haynes, R.B. and Richardson, W.S. (1996). Evidence based medicine: what it is and what it isn't. *British Medical Journal* 312:71-72.



Sand, P.K. and Brubaker, L.T. (1990). Advances in non-operative treatment of genuine stress incontinence. *Current Opinion in Obstetrics and Gynaecology* 2:599-604.

Sandvik, H. (1995). Female urinary incontinence. Studies of epidemiology and managment in general practice. Division of General practice, Department of Public Health and Primary Care, University of Bergen, Norway.

Sandvik, H., Kveine, E. and Hunskaar, S. (1993a). Female urinary incontinence psychosocial impact, self-care and consultations. *Scandanavian Journal of Caring Sciences* 7:53-55.

Sandvik, H., Hunskaar, S., Seim, A., Hermstad, R., Vanvik, A. and Bratt, H. (1993b). Validation of a severity index in female urinary incontinence and its implementation in an epidemiological survey. *Journal of Epidemiology and Community Health* 47:497-499.

Schiotz, H.A. (1994). One month maximal electrostimulation for genuine stress incontinence in women. *Neurourology and Urodynamics* 13:43-50.

Schnelle, J.F. (1990). Treatment of urinary incontinence in nursing home patients by prompted voiding. *Journal of the American Geriatrics Society* 38(3):356-360.

Seccombe, I. and Smith, G. (1996). In the balance: Registered Nurse Supply and Demand. Brighton: Institute for Employment Studies.

Seccombe, I. and Smith, G. (1997). Taking part: registered nurses and the Labour market in 1997 - A summary. Institute for Employment Studies. Report 338. 338:1-8.

Sheehan, J. (1986). Nursing Research in Britain: the state of the art. *Nurse Education Today* 6 (1):3-10.

Shimp, L.A. (1988). Influence of drug therapy on urinary incontinence. *Topics in Geriatric Rehabilitation* 2:30-41

- Silverman, D. (1993). *Interpreting Qualitative Data. Methods for analysing talk, text and interaction*. London: Sage Publications.
- Simeonova, Z. and Bengtsson, C. (1990). Prevalence of Urinary Incontinence among women at a Swedish Primary Health Care Center. *Scandinavian Journal of Primary Health Care*. 8:203-206.
- Sindhu, F. (1996). Are non-pharmacological nursing interventions for the management of pain effective? - A meta-analysis\*. *Journal of Advanced Nursing* 24:1152-1159.
- Sleep, J. and Grant, A. (1987). Pelvic floor exercises in post natal care. *Midwifery* 3:158-164.
- Smith, J.P. (1982). *The problem of promoting continence*. Royal College of Nursing of the United Kingdom/Squibb Surgicare Ltd. London: Squibb.
- Smith, R.B. and Manning, P.K. (1982). *Qualitative Methods: A handbook of social science methods (volume two)*. Cambridge, MA:Ballinger.
- Smith, N.S. and Smith, L. (1987). *Continence and incontinence: psychological approach to development and treatment*. London: Croom Helm.
- Snooks, S.J., Swash, M., Mathers, S.E. and Henry, M.M. (1990). Effect of Vaginal Delivery on the Pelvic Floor: A Five Year Follow-up. *British Journal of Surgery* 77:1358-1360.
- Snooks, S.J., Setchell, M., Swash, M. and Henry, M. (1984). Injury to Innervation of Pelvic Floor Musculature in Childbirth. *Lancet* 2:546-550.
- Soumerai, S.B. and Avorn, J. (1990). Principles of educational outreach 'academic detailing' to improve clinical decision making. *Journal of the American Medical Association* 263:549-556.
- Sourander, L.B. (1990). Treatment of urinary incontinence: the place of drugs. *Gerontology* 36 suppl 2:19-26.

- Spangeler, B.F., Risley, T. and Rand Bilyew, D.D. (1984). The Management of Dehydration and Incontinence in Non-ambulatory Geriatric Patients. *Journal of Applied Behaviour Analysis* 17:397-401.
- Stanton, S.L. (1984) Gynaecological Aspects in Mandelstam, D. (ed). *Incontinence and its Management*. London: Croom Helm p.55-75.
- Stanton, S.L., Plevnik, S. and Peattie, A. (1986). Cones: a conservative method of treating Genuine Stress incontinence. Proceedings, International Continence Society, Boston:227.
- Stevens, A., Milne, R. and Black, N. (1998). Researching Health Services. In Black N, Brazier J, Fitzpatrick R, Reeves B Ed. *Health Services Research Methods: A guide to best practice*. London: BMJ Books.
- Strauss, A. and Corbin, J. (1990). *Basics in Qualitative Research*. London: Sage Publications.
- Styles, M.M. (1982). Society and Nursing: the new professionalism. *ANA Publication* (G-157):16-26.
- Summitt, R., Stovall, T.G., Bent, A.E. and Ostergard, D.R. (1992). Urinary Incontinence: correlation of history and brief office evaluation with multichannel urodynamic testing. *American Journal of Obstetrics and Gynaecology* 166(6):18835-18844.
- Swash, M. (1988). 'Childbirth and Incontinence' *Midwifery* 4:13-18.
- Szonyi, G. and Millard, R. (1994). Controlled trial evaluation of a general practitioner package on incontinence: use of a mailed questionnaire. *British Journal of Urology* 73, 615-620.
- Talbot, L. (1995). *Principles and practice of nursing research*. New York: Mosby.
- Tarrier, N. and Lamer, S. (1983) The effect of management of social reinforcement on toilet requests on a geriatric ward. *Age and Ageing* 12:234-9

- Tattersall, A. (1985). 'Getting the whole picture'. *Nursing Times* 3 April: 55-8.
- Thomas, T.M., Plymat, K.R., Blannin, J. and Meade, T.W. (1980). Prevalence of urinary incontinence. *British Medical Journal*, 281,1243-1245
- Thomas, L., Cullum, N., McColl, E., Rousseau, N., Soutter, J. and Steen, N. (1998). Guidelines in professions allied to medicine. (Cochrane Review). In: The Cochrane Library, Issue 1, 1999. Oxford: Update Software.
- Tobin, G.W. (1992). *Incontinence in the Elderly*. London: Edward Arnold.
- Turner-Stokes, L. and Frank, A.O. (1992). Urinary incontinence among patients with arthritis - a neglected disability. *Journal of Rehabilitation and Social Medicine*. 85 (7):389-393.
- UKCC. (1992). Code of Professional Conduct. United Kingdom Council for Nurses, Midwives and Health Visitors, London, UK.
- Vaughan, B. (1989). Two roles - one job. *Nursing Times* 85(11):52.
- Vaughan, B. (1992). The nature of nursing knowledge. In Robinson, K. and Vaughan, B. Ed. *Knowledge for nursing practice*. Oxford: Butterworth-Heinemann Ltd.
- Vehkalahti, I. and Kilveda, S.L. (1985). Urinary incontinence and its correlates in very old age. *Gerontology* 31:391-6.
- Versi, E., Cardozo, L., Anand, D. and Cooper, D. (1991). Symptoms analysis for the diagnosis of genuine stress incontinence. *British Journal of Obstetrics and Gynaecology* 98:815-819.
- Vetter, N.J., Jones, D.A. and Victor, C.R. (1981). Urinary Incontinence in the elderly at home. *The Lancet* :1275-1277.
- Vinsnes, A.G., Hunskaar, S. (1991). Distress Associated with Urinary Incontinence as Measured by a Visual Analogue Scale. *Scandinavian Journal of Caring Science* 5,1:57-61.

Vissner, A. (1980). Effects of an information booklet on well being of hospital patients. *Patient Counselling and Health Education* 2:51-64.

Wall, L. (1990). Diagnosis and management of urinary incontinence due to detrusor instability. *Obstetrical and Gynaecological survey* 45:11.

Walsh, M. and Ford, P. (1989). *Nursing Rituals: research and rational actions*. Oxford: Heinemann.

Walters, M.D. and Realini, J.P. (1992). The evaluation and treatment of urinary incontinence in women: a primary care approach. *Journal of the American Board of Family Practitioners* 5 (3): 289-301.

Walters, M.D. (1992). Non surgical treatment of urinary incontinence. *Current Opinion in Obstetrics and Gynaecology* 4:554-558.

Webb, C. and Mackenzie, J. (1993). Where are we now? Research-mindedness in the 1990s. *Journal of Clinical Nursing* 2:129-133.

Wells, T. (1975). *Towards understanding nursing problems in care of the hospitalised elderly*. PhD thesis, University of Manchester.

Wells, T. (1984). Social and Psychological implications of incontinence. In Brocklehurst, J.C. (ed). *Urology in the Elderly*. Edinburgh: Churchill Livingstone 107-126.

Wells, T. (1988). Additional treatments for urinary incontinence. *Topics in Geriatric Medicine* 3:48-57.

Wells, T., Brink, C.A., Diokno, A.C., Wolfe, R. and Gillis, G.L. (1991). Pelvic muscle exercise for stress urinary incontinence in elderly women. *Journal of the American Geriatrics Society* 39:785-791.

Wells, T. (1990). Pelvic (floor) muscle exercise. *Journal of the American Geriatrics Society* 38:333-337.

White, C.W., Lemon, D.K. and Albanese, M.A. (1980). Efficacy of health education efforts in hospitalised patients with serious cardiovascular illness: can teaching succeed. *Patient Counselling and Health Education* 2:189-196.

Williams, K., Roe, B. and Sindhu, F. (1995). Using a handbook to improve nurses' continence care. *Nursing Standard* 10 (8):39-42.

Williams, M.E. and Pannill, F.C. (1982). Urinary incontinence in the elderly: physiology, pathophysiology, diagnosis and treatment. *Annals of internal medicine* 97:895-907.

Willington, F.L. (1980). Urinary Incontinence: a practical approach *Geriatrics* 35: 41-8.

Wilson-Barnett, J. (1988). Patient Teaching or Patient Counselling? *Journal of Advanced Nursing* 13:215-222.

Wilson-Barnett, J., Corner, J. and DeCarle, B. (1990). Integrating nursing research and practice: the role of researcher as teacher. *Journal of Advanced Nursing* 15:621-625.

Wiseman, P.A. and Malone-Lee, J. (1991). Terodiline with bladder re-training for treating detrusor instability in elderly people. *British Medical Journal* 307:994-996.

Wolin, L.H. (1969). Stress incontinence in young, healthy, nulliparous female subjects. *The Journal of Urology* 101:545-549.

Wyatt, J.C., Paterson-Brown, S., Johanson, R., Altman, D.G., Bradburn, M.J. and Fisk, N.M. (1998). Randomised trial of educational visits to enhance use of systematic reviews in 25 obstetric units. *British Medical Journal* 17:317(7165):1041-1046.

Wyman, J.F. (1993). Managing urinary incontinence with bladder training: a case study. *Journal of ET Nursing* 20:121-126.

- Wyman, J.F., Chuoi, S.C., Harkins, S.W., Wilson, M.S. and Fantl, J.A. (1988). The urinary diary in evaluation of incontinent women: a test-retest analysis. *Obstetrics and Gynaecology* 71:812.
- Wyman, J.F., Elswick, J.R., Ory, M.G., Wilson, M.S. and Fantl, A. (1993). Influence of functional, urological and environmental characteristics on urinary incontinence in community dwelling women. *Nursing Research* 42 (5):270-275.
- Wyman, J.F., Harkins, S.W., Chuoi, S.C., Taylor, J.R. and Fantl, J.A. (1987). Psychosocial impact of urinary incontinence in women. *Obstetrics and Gynaecology* 70 (3):378-381.
- Wyman, J.F., Harkins, S.W. and Fantl, J.A. (1990). Psychosocial impact of urinary incontinence in the community-dwelling population. *Journal of the American Geriatrics Society* 38 (3):282-288.
- Yarnell, J.W.G. and St Leger, A.S. (1979). The prevalence, severity and factors associated with urinary incontinence in a random sample of the elderly. *Age and Ageing* 8:81-85.
- Yarnell, J.W.G., Voyle, G.J., Seetnam, P.M., Millbank, J., Richards, C.J. and Stephenson, T.P. (1981). The prevalence and severity of urinary incontinence in women. *Journal of Epidemiology and Community Health* 35:71-74.
- Yin, R.K. (1994). *Case study research. Design and Methods*. Second Edition. Applied Social Research methods, Series Volume Five. London: Sage Publications.
- Youssef, F.A. (1983). Compliance and therapeutic regimens: a follow-up study of patients with affective disorders. *Journal of Advanced Nursing* 8:513-517.
- Yu, L.C., Johnson, K. and Kaltreider, D.L. (1991). Urinary Incontinence: Nursing Home Staff Reaction Toward Residents. *Journal of Gerontological Nursing* 17,11:34-41.
- Yu, L.C. and Kaltreider, D.L. (1987). Stressed nurses: dealing with incontinent patients. *Journal of Gerontological Nursing* 13(1):27-30.

Yu, L.C., Kaltreider, D.L., Hu, T., Igou, J.F. and Craighead, W.E. (1989) The ISQ-P Tool Measuring Stress Associated with Incontinence. *Journal of Gerontological Nursing* 15,2:9-15.



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## Appendix A

### BARRIERS questionnaire and covering letter

Date

Dear

Kate Williams and Brenda Roe are both nurses currently involved in research in the field of incontinence and are undertaking a research project looking at barriers and facilitators to the use of research by nurses in practice. The aim of the project is to understand what barriers there are to using research in practice and to determine those things which may help nurses to use research in practice. This research has been awarded an Oxford Regional Research Scheme Grant and is being conducted in the South Buckinghamshire NHS Trust.

Enclosed is a short questionnaire which will take approximately 10-15 minutes to complete all information given will be treated in the strictest confidence and will be used only for the purpose of this survey. A FREEPOST envelope is provided to send the completed questionnaire back to the National Institute for Nursing. It would be helpful if the questionnaire could be completed and returned by the 12 December 1994.

Your involvement in this project is entirely voluntary, however your views will offer a valuable contribution to our work and will be greatly appreciated. This survey is part of a larger study and we may contact some nurses at a later stage.

If you decide not to take part in this study it would be a help to us if you could return the blank questionnaire in the FREEPOST envelope anyway.

Thank you for taking the time to share your views.  
Yours sincerely

Kate Williams  
Research and Development Officer  
National Institute for Nursing  
Radcliffe Infirmary  
Oxford

Brenda Roe  
Senior Research Fellow  
Health Services Research Unit  
Department of Public Health  
and Primary Care  
University of Oxford

**CONTINENCE PROMOTION IN HEALTH CARE OF THE ELDERLY: AN  
INVESTIGATION INTO THE DISSEMINATION AND UTILISATION OF  
RESEARCH BY NURSES**

**BARRIERS AND FACILITATORS TO USING RESEARCH IN PRACTICE**

(Funk, S.G., Champagne, M.T., Wiese R.A., and Tornquist, E.M.,1991)

All information will be treated in the strictest confidence and will be used only for the purposes of this survey.

**SECTION 1**

1. What is your position? (Please tick box)

1.1 ☐

Ward Sister/Charge Nurse

☐

Primary Nurse

☐

Associate Nurse

☐

Team Nurse

☐

Bank Nurse

☐

Other (please specify) \_\_\_\_\_

☐

2. What is your grade? (Please tick box)

1.2 ☐

G

☐

F

☐

E

☐

D

☐

Other (please specify) \_\_\_\_\_

☐

3. Which qualifications do you hold? (Tick all which apply)

S.R.N./R.G.N

☐

1.3a ☐

E.N.

☐

1.3b ☐

E.N.B. courses

☐

1.3c ☐

University Degree(s)

☐

1.3d ☐

Other (please specify) \_\_\_\_\_

☐

1.3e ☐

4. Are you currently registered on or taking a formal course?

YES ☐

NO ☐

1.4 ☐

If yes, what course is this? (Please specify) \_\_\_\_\_

1.4a ☐

5. Do you work full time or part time (please tick box)

Full time

☐

1.5 ☐

Part time (more than 20 hours a week)

☐

Part time (less than 20 hours a week )

☐

If part time, how many hours a week do you work? \_\_\_\_\_

1.5a ☐ ☐

6. Do you work day or night duty? (please tick appropriate box)

Day duty only

☐

1.6 ☐

Permanent night duty only

☐

Internal rotation (day and night duty)

☐

7. In what year did you qualify as a nurse?

1.7 ☐ ☐

19\_\_

8. How old are you? \_\_\_\_\_

1.8 ☐ ☐

9. Are you (please tick appropriate box):

FEMALE

☐

1.9 ☐

MALE

☐

## SECTION 2

### BARRIERS AND FACILITATORS TO THE USE OF RESEARCH IN PRACTICE

Articles and journals indicate that nurses in practice often do not use the results of research to help guide their practice. There are a number of reasons why this might be. We would like to know the extent to which *you* think each of the following situations is a barrier to nurses' use of research to alter/enhance their practice.

**For each item, circle the number of the response that best represents your view.**

Thank you for sharing your views with us.

#### THIS IS A BARRIER

1=To no extent

2=To a little extent

3=To a moderate extent

4=To a great extent

5=No opinion

1. Research reports/articles are not readily available.	1	2	3	4	5
2. Implications for practice are not made clear.	1	2	3	4	5
3. Statistical analyses are not understandable.	1	2	3	4	5
4. The research is not relevant to the nurse's practice.	1	2	3	4	5
5. The nurse is unaware of the research.	1	2	3	4	5
6. The facilities are inadequate for implementation.	1	2	3	4	5
7. The nurse does not have time to read research.	1	2	3	4	5
8. The research has not been replicated.	1	2	3	4	5
9. The nurse feels the benefits of changing practice will be minimal.	1	2	3	4	5
10. The nurse is uncertain whether to believe the results of the research.	1	2	3	4	5
11. The research has methodological inadequacies.	1	2	3	4	5
12. The relevant literature is not compiled in one place.	1	2	3	4	5
13. The nurse does not feel she/he has enough authority to change patient care procedures.	1	2	3	4	5

## THIS IS A BARRIER

1=To no extent

2=To a little extent

3=To a moderate extent

4=To a great extent

5=No opinion

14.The nurse feels results are not generalizable to own setting.	1	2	3	4	5
15.The nurse is isolated from knowledgeable colleagues with whom to discuss the research.	1	2	3	4	5
16.The nurse sees little benefit for self.	1	2	3	4	5
17.Research reports/article are not published fast enough.	1	2	3	4	5
18.Physicians will not cooperate with implementation.	1	2	3	4	5
15.Administration will not allow implementation.	1	2	3	4	5
20.The nurse does not see the value of research for practice.	1	2	3	4	5
21.There is not a documented need to change practice.	1	2	3	4	5
22.The conclusions drawn from the research are not justified.	1	2	3	4	5
23.The literature reports conflicting results.	1	2	3	4	5
24.The research is not reported clearly and readably	1	2	3	4	5
25.Other staff are not supportive of implementation	1	2	3	4	5
26.The nurse is unwilling to change/try new ideas	1	2	3	4	5
27.The amount of research information is overwhelming.	1	2	3	4	5
28.The nurse does not feel capable of evaluating the quality of the research.	1	2	3	4	5
25.There is insufficient time on the job to implement new ideas.	1	2	3	4	5

Are there other things you think are barriers to research utilisation? If so, please list and rate each on the scale:

- |     |       |   |   |   |   |   |
|-----|-------|---|---|---|---|---|
| 30. | _____ | 1 | 2 | 3 | 4 | 5 |
| 31. | _____ | 1 | 2 | 3 | 4 | 5 |
| 32. | _____ | 1 | 2 | 3 | 4 | 5 |
| 33. | _____ | 1 | 2 | 3 | 4 | 5 |

34. Which of the above items do you feel are the *three greatest barriers* to nurses' use of research.

Greatest Barrier	Item number:
Second Greatest Barrier	Item number:
Third Greatest Barrier	Item number:

35. What things do you think *facilitate* the use of research in practice?

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Questions 1-35 © 1987, Funk, Champagne, Tornquist and Wiese.

Funk, S.G., Champagne, M.T., Weise, R.A., and Tornquist, E.M., (1991). BARRIERS: The barriers to research utilisation scale. *Applied Nursing Research* 4,39-45.



### SECTION 3

We are interested to know whether nurses are able to use research findings in their everyday practice, the following questions allow you to give examples of times when you were able to use research to guide your practice and times when you were not.

1. Can you give an example where you felt you were *able* to use research in practice.

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2. Can you give an example where you felt you were *unable* to use research in practice.

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Thank you very much for sharing your views

Please return to Kate Williams at the National Institute for Nursing, Radcliffe Infirmary in the  
S.A.E. enclosed.

## Appendix B

### Project information sheet for nurses

## PROJECT INFORMATION SHEET

### CONTINENCE PROMOTION IN HEALTH CARE OF THE ELDERLY: AN INVESTIGATION INTO THE DISSEMINATION AND UTILISATION OF RESEARCH BY NURSES

Kate Williams (National Institute for Nursing) Research and Development Officer and Brenda Roe (Health Services Research Unit, University of Oxford) Senior Research Fellow are both nurses undertaking a project to look at the use of continence research in clinical practice. The project aims to find out whether nurses use the latest research findings to help them plan care for their patients who suffer from urinary incontinence. As you may recall a postal survey was recently sent to all nurses involved in care of the elderly in your hospital asking what barriers and facilitators there were to the use of research in practice. For the second stage of the project we have selected around 10 nurses to interview in more depth, in order to gain more information about the types of things which make the use of research difficult in practice and those things which help in its use. It is hoped that the information we gain from you and your colleagues in these interviews will help us to design an intervention which will help you to use current research in your everyday practice.

We would like to tape this interview however, all information you give is completely confidential and the tapes will be erased following analysis. We would be pleased if you would give your consent to a taped interview by signing the attached sheet.

KATE WILLIAMS  
National Institute for Nursing

BRENDA ROE  
Health Services Research Unit

## Appendix C

### Nurse Interview: Consent Form

**CONTINENCE PROMOTION IN HEALTH CARE OF THE  
ELDERLY: AN INVESTIGATION INTO THE DISSEMINATION  
AND UTILISATION OF RESEARCH BY NURSES**

Have you read the information sheet? YES/NO

Have you had an opportunity to ask questions and discuss the study?  
YES/NO

Have you received satisfactory answers to all your questions?  
YES/NO

I.....

hereby consent to participate in this study, on the understanding that I can withdraw this consent at any time. I understand that all information gained will be confidential and that information which is taped will be erased following analysis.

Date.....Signature.....

Name (Block Letters).....

I confirm that I have explained the purpose and nature of the study to the nurse.

Date.....Signed.....

## Appendix D

### Nurse Interview Schedule

## INTERVIEW SCHEDULE

I want to ask a few preliminary questions relating to your care of incontinent patients and then ask about the use of research in practice. If there are any particular issues you want to bring up and discuss, please do.

Ward/Hospital:      Job:      Length of time since qualification:Grade:

1. Is the care of incontinent patients part of your role?

YES

NO

2. If yes, how would you describe the relative importance of this part of your role?

3. Has your practice changed when caring for incontinent patients since you qualified?

YES

NO

What influenced your change in practice?

Why do you think it has remained the same?

4. Is your practice research based?

YES

NO

In what ways?

Why not?

5. Do you think clinical practice should be based on research?

YES

NO

Why, in what ways?

Why not?

6. Four key factors were identified from the postal survey as factors which restrict nurses from using research in practice, I would like to ask you about each of these factors.

A number of nurses felt that research is overwhelming

Do you believe this to be the case?

YES

NO

Why, in what way?

Why not?

A number of nurses felt that other staff are not supportive of implementation

Do you believe this to be the case?

YES

NO

Why, in what way?

Why not?

A number of nurses felt that statistical analyses are not understandable

Do you believe this to be the case?

YES

NO

Why, in what way?

Why not?

A number of nurses felt they were not capable of evaluating the quality of research

Do you believe this to be the case?

YES

NO

Why, in what way?

Why not?

6a. Can you identify any other factors which restrict you from using research in practice?

YES

NO



If yes, what are they?

7. Four key factors were identified from the postal survey as factors which would help nurses to use research in practice: I would like to ask you about each of these factors and ask what they mean to you

A number of nurses felt that education should be more research orientated?  
Do you agree with this statement?

YES

NO

Why, in what way?

Why not?

A number of nurses felt that making new research information available and accessible would help nurses to use research in practice. Do you believe this to be the case?

YES

NO

Why, in what way?

Why not?

A number of nurses felt that facilitation of change was a key factor in the use of research. Do you believe this to be the case?

YES

NO

Why, in what way?

Why not?

What do you think constitutes a good means of facilitation

A number of nurses felt that involvement of the whole care team, would help nurses to use research in practice. Do you believe this to be the case?

YES

NO

Why, in what way?

Why not?

8. What do you think would help you to use research on incontinence in the area in which you work, in addition to the above factors?

9. Can you give an example where you felt you were **able** to use research in practice. (probes: in what way, why do you think you felt able to use research)

10. Can you give an example where you felt you were **unable** to use research in practice (probes)

Ask questions 11 and 12 if similar themes do not arise in questions 9 and 10.

11. In the initial survey, some nurses identified continence care as an aspect of care where they felt able to use research in practice. Have you been able to use research in continence care in your everyday practice?

YES

NO

In what way?

Why do you think you have not been able to use it?

12. In the initial survey, nurses gave reasons why they felt unable to use research in practice. Three main reasons were identified.

A number of nurses felt that research is not relevant to small community hospitals.

Do you believe this to be the case?

YES

NO

Why, in what way?

Why not?

A number of nurses felt that there is not enough time to use research.

Do you believe this to be the case?

YES

NO

Why do you feel this?

Why not?

A number of nurses feel unable to implement incontinence research.  
Do you believe this to be the case?

YES

NO

Why, in what way?

Why not?

13. Would you be interested in working as a pilot ward to increase the use of  
continence research in practice?

## Appendix E

### Continence Care Questionnaire (pre-test)

# **CONTINENCE CARE QUESTIONNAIRE**

Care of patients with urinary and faecal incontinence is a common aspect of nursing practice both in the hospital and in the community. It is a widespread problem having medical, nursing, financial and personal implications for health care providers and sufferers (Mohide 1986). In this study we are interested in looking at ways of providing you with information to help you in your nursing care of people who suffer from incontinence.

The questionnaire is divided into 4 sections. Please answer each question as best you can. All information given will be treated in the strictest confidence and will be used only for the purpose of this survey. Time allocation for completion of the questionnaire is 30 minutes. Please insert your personal number shown on your identification card in the space provided and retain your identification card for the second part of the survey.

**PERSONAL CODE =**

6. Are there any factors which constrain your nursing care of patients with urinary and faecal incontinence?

NO ☐

YES ☐

If yes, please state what these factors are.

4.6a ☐

4.6b ☐

---

THANK YOU VERY MUCH FOR YOUR HELP

# CONTINENCE CARE QUESTIONNAIRE

## SECTION 1

The following questions are about yourself and your work. Please consider each one and tick the appropriate answer.

☐

Pers Code

☐ ☐ ☐

1. Where do you work?

Name of Hospital

Name of Ward

1.1

☐ ☐  
☐ ☐

1.1

2. What is your position? (Please tick box)

Ward Sister/Charge Nurse

Primary Nurse

Associate Nurse

Team Nurse

Other (please specify)

1.2

☐

3. What is your grade (Please tick box)

G

F

E

D

Other (Please specify)

1.3

☐

4. Which qualifications do you hold (Tick all which apply)

SRN/RGN

EN

ENB Courses

University Degree(s)

Other (Please specify)

1.4a

☐

1.4b

☐

1.4c

☐

1.4d

☐

1.4e

☐

5. Are you a continence link nurse?

No

Yes

1.5

☐

## SECTION 2

The following section contains questions relating specifically to URINARY incontinence. Please write your responses briefly in the space provided.

1. How would you define incontinence?

2.1a

2.1b

2.1c

2.1d

2.1e

2.1f

2.1g

2.1h

2. Approximately how many people in the UK suffer from urinary incontinence?

2.2



3. Who suffers with urinary incontinence?

2.3

4. What are the main types of urinary incontinence?

2.4a

2.4b

2.4c

2.4d

2.4e

2.4f

2.4g

2.4h

<input type="text"/>	<input type="text"/>
----------------------	----------------------

5. What other factors can cause urinary incontinence?

2.5a	<input type="text"/>
2.5b	<input type="text"/>
2.5c	<input type="text"/>
2.5d	<input type="text"/>
2.5e	<input type="text"/>
2.5f	<input type="text"/>
2.5g	<input type="text"/>
2.5h	<input type="text"/> <input type="text"/>

6. What general factors affect a person's ability to cope with the bladder, which can lead to urinary incontinence?

2.6a	<input type="text"/>
2.6b	<input type="text"/>
2.6c	<input type="text"/>
2.6d	<input type="text"/>
2.6e	<input type="text"/>
2.6f	<input type="text"/>
2.6g	<input type="text"/>
2.6h	<input type="text"/> <input type="text"/>

7. How would you assess someone with urinary incontinence?

2.7a

2.7b

2.7c

2.7d

2.7e

2.7f

2.7g

2.7h

8. What investigations may be indicated for an individual suffering from urinary incontinence?

2.8a

2.8b

2.8c

2.8d

2.8e

2.8f

2.8g

2.8h

2.8i

2.8j

9. What strategies would you use for the promotion of urinary continence?

2.9a

2.9b

2.9c

2.9d

2.9e

2.9f

2.9g

2.9h

10. What drugs are commonly used in the promotion of urinary continence?

2.10a

2.10b

2.10c

2.10d

2.10e

2.10f

2.10g

11. What aids and appliances can be used in the management of urinary incontinence?

2.11a

2.11b

2.11c

2.11d

2.11e

2.11f

2.11g

2.11h

2.11i

2.11j

2.11k

2.11l

2.11m

2.11n

2.11o

2.11p

2.11q

2.11r

12. What aids and appliances do you currently use for urinary incontinence?

2.12a	<input type="checkbox"/>
2.12b	<input type="checkbox"/>
2.12c	<input type="checkbox"/>
2.12d	<input type="checkbox"/>
2.12e	<input type="checkbox"/>
2.12f	<input type="checkbox"/>
2.12g	<input type="checkbox"/>
2.12h	<input type="checkbox"/>
2.12i	<input type="checkbox"/>
2.12j	<input type="checkbox"/>
2.12k	<input type="checkbox"/>
2.12l	<input type="checkbox"/>
2.12m	<input type="checkbox"/>
2.12n	<input type="checkbox"/>
2.12o	<input type="checkbox"/>
2.12p	<input type="checkbox"/>
2.12q	<input type="checkbox"/>
2.12r	<input type="checkbox"/> <input type="checkbox"/>

### SECTION 3

The following section relates specifically to FAECAL incontinence.  
Please write your responses briefly in the space provided.

1. What are the commonest causes of faecal incontinence?

3.1a

3.1b

3.1c

3.1d

3.1e

3.1f

3.1g

2. How would you assess someone with faecal incontinence?

3.2a

3.2b

3.2c

3.2d

3.2e

3.2f

3.2g

3.2h

3.2i

3.2j

3. What investigations may be indicated for an individual suffering from faecal incontinence?

3.3a	<input type="text"/>
3.3b	<input type="text"/>
3.3c	<input type="text"/>
3.3d	<input type="text"/>
3.3e	<input type="text"/>
3.3f	<input type="text"/>
3.3g	<input type="text"/>
3.3h	<input type="text"/> <input type="text"/>

4. What strategies would you use for the management of faecal incontinence?

3.4a	<input type="text"/>
3.4b	<input type="text"/>
3.4c	<input type="text"/>
3.4d	<input type="text"/>
3.4e	<input type="text"/>
3.4f	<input type="text"/>
3.4g	<input type="text"/>
3.4h	<input type="text"/>
3.4i	<input type="text"/> <input type="text"/>



5. What drugs are commonly used in the management of faecal incontinence?

3.5a

3.5b

3.5c

3.5d

3.5e

3.5f

3.5g

3.5h

## SECTION 4

This section refers to general questions about urinary and faecal incontinence.

1. In your opinion should a person with incontinence have a medical diagnosis?

NO ☐

YES ☐

4.1

☐

2. Do you need a medical diagnosis of incontinence to plan the care of a patient with incontinence?

NO ☐

YES ☐

4.2

☐

3. Would you refer someone with incontinence to other health care professionals

NO ☐

YES ☐

4.3

☐

If yes, list other health care professionals who may be approached.

4.3a

☐

4.3b

☐

4.3c

☐

4.3d

☐

4.3e

☐

4.3f

☐

4.3g

☐

4.3h

☐

4.3i

☐

4.3j

☐

4.3k

☐

4.3l

☐

4. Which methods do you use when teaching patients and carers about the management of their urinary and faecal incontinence?

4.4a	<input type="checkbox"/>
4.4b	<input type="checkbox"/>
4.4c	<input type="checkbox"/>
4.4d	<input type="checkbox"/>
4.4e	<input type="checkbox"/>
4.4f	<input type="checkbox"/> <input type="checkbox"/>

5. What factors influence the methods of teaching you use?

4.5a	<input type="checkbox"/>
4.5b	<input type="checkbox"/>
4.5c	<input type="checkbox"/>
4.5d	<input type="checkbox"/>
4.5e	<input type="checkbox"/>
4.5f	<input type="checkbox"/>
4.5g	<input type="checkbox"/>
4.5h	<input type="checkbox"/>
4.5i	<input type="checkbox"/> <input type="checkbox"/>

## Appendix F

Table: Pre-test response, experimental group versus control group

# APPENDIX F. PRE-TEST RESPONSE EXPERIMENTAL GROUP VERSUS CONTROL GROUP

Section	Variable	Group				$\chi^2(1)$ , p=
		Exp	Exp	Con	Con	
		N	Y	N	Y	
Definition of incontinence	Involuntary loss	165	39	25	4	.1899,.663
	Urine	102	102	13	16	.104,.747
	Faeces	172	32	24	5	.000,.746
	Objectively demonstrable	X <sup>1</sup>	X	X	X	X
	Social or hygienic problem	197	7	28	1	.000,.1.0
Prevalence of incontinence	UK number of sufferers	170	15	23	5	1.69,.193
	Who suffers?	104	100	16	13	.050,.822
Types of urinary incontinence	Urge	130	73	21	8	.457,.498
	Stress	17	186	4	25	.366,.544
	Outflow obstruction	165	38	21	8	.759,.383
	Neurogenic bladder	182	21	25	4	.057,.810
	Nocturnal enuresis	175	28	23	6	.492,.482
Factors causing urinary incontinence	Urinary tract infection	69	129	11	18	.013,.907
	Faecal impaction	151	47	22	7	.000,.1.0
	Drugs	144	54	18	11	.932,.334
	Endocrine disorders	187	11	28	1	.000,.976
	Age	179	19	28	1	.547,.459
Factors affecting ability to cope with the bladder	Mobility	78	115	11	17	.000,.1.0
	Mental state	118	75	15	13	.311,.576
	Psychological state	164	29	26	2	.691,.405
	Environment	130	63	23	5	1.86,.172
	Carers	185	8	27	1	.000,.1.0
Assessment	Continence History	109	88	14	15	.262,.608
	Medical history	161	36	27	2	1.59,.206
	Social history	178	19	23	6	2.11,.146
	Physical examination	174	23	28	1	1.0,.307
	Frequency volume chart	111	86	21	8	2.06,.150

<sup>1</sup>X indicates insufficient numbers

Investigations	Frequency volume chart	184	14	26	3	.061,.804
	Urinalysis	133	65	18	11	.110,.739
	MSU	41	157	7	22	.032,.857
	Physical examination	162	36	20	9	1.88,.170
	Pelvic floor assessment	182	16	28	1	.257,.611
	Urodynamics	164	34	23	6	.041,.838
	Cystoscopy	157	41	17	12	4.94,.026
Promotion of continence	Bladder re-education	101	96	13	14	.009,.921
	Pelvic muscle re-education	117	80	16	11	.000,1.0
	Vaginal cones	X	X	X	X	X
	Electrical stimulation	X	X	X	X	X
	General exercise	189	8	25	2	.085,.769
Education: Types	Cognitive learning	88	75	11	16	1.14,.285
	Affective learning	138	25	21	6	.378,.538
	Psychomotor skills	108	55	13	14	2.54,.110
Factors affecting teaching methods	Motivation	139	13	23	2	.000,1.0
Adopted	Memory	141	11	25	0	.887,.346x
	Age	122	30	23	2	1.28,.257
	Compliance	117	35	19	6	.000,1.0
	Psychological Factors	142	10	24	1	.002,.961
	Environment	128	24	18	7	1.45,.228
Constraints	Constraints on care	66	107	3	24	6.40,.011

## Appendix G

Table: Post-test response, experimental group versus control group

# APPENDIX G. POST-TEST RESPONSE EXPERIMENTAL GROUP VERSUS CONTROL GROUP

Section	Variable	Group				$\chi^2_{(1)}$ ,p=
		Exp	Exp	Con	Con	
		N	Y	N	Y	
Definition of incontinence	Involuntary loss	73	37	10	4	.006,.937
	Urine	38	72	3	11	.463,.495
	Faeces	80	30	11	3	.021,.884
	Objectively demonstrable	106	4	14	0	.000,1.0x
	Social or hygienic problem	89	21	12	2	.004,.943
Prevalence of incontinence	UK number of sufferers	53	51	12	2	4.70,.030
	Who suffers?	56	54	7	7	.000,1.0
Types of urinary incontinence	Urge	27	83	11	3	14.6,.000x
	Stress	5	105	1	13	.000,1.0
	Outflow obstruction	57	53	10	4	1.21,2.70
	Neurogenic bladder	54	56	12	2	5.30,.021
	Nocturnal enuresis	101	9	13	1	.000,1.0x
Factors causing urinary incontinence	Urinary tract infection	35	72	2	12	1.20,.271
	Faecal impaction	58	49	8	6	.000,1.0
	Drugs	59	48	7	7	.006,.937
	Endocrine disorders	94	13	12	2	.000,1.0x
	Age	89	18	13	1	.297,.585x
Factors affecting ability to cope with the bladder	Mobility	41	65	5	9	.000,1.0
	Mental state	54	52	9	5	.428,.512
	Psychological state	91	15	11	3	.101,.750
	Environment	51	55	10	4	1.83,.175
	Carers	78	28	14	0	3.46,.062x
Assessment	Continence History	44	63	8	6	.725,.394
	Medical history	65	42	13	1	4.25,.039
	Social history	79	28	11	3	.003,.954
	Physical examination	94	13	14	0	.849,.356x
	Frequency volume chart	45	62	8	6	.613,.433
Investigations	Frequency volume chart	93	13	13	1	.013,.905
	Urinalysis	78	28	10	4	.000,1.0x
	MSU	27	79	4	10	.000,1.0x
	Physical examination	64	42	7	7	.205,.650



	Pelvic floor assessment	84	22	13	1	.730,.392
	Urodynamics	82	24	11	3	.000,1.0
	Cystoscopy	81	25	11	3	.000,1.0
Promotion of continence	Bladder re-education	26	81	10	4	10.9,.000x
	Pelvic muscle re-education	55	52	9	5	.388,.532
	Vaginal cones	100	7	14	0	.142,.705x
	Electrical stimulation	99	8	14	0	.236,.626x
	General exercise	107	0	13	1	1.44,.227x
Education: Types	Cognitive learning	44	51	6	7	.000,1.0
	Affective learning	76	19	12	1	.477,.489x
	Psychomotor skills	48	47	3	10	2.44,.118
Factors affecting teaching methods	Motivation	84	8	13	0	.300,.583x
Adopted	Memory	81	11	11	2	.000,1.0x
	Age	64	28	12	1	1.91,.165x
	Compliance	74	18	9	4	.319,.572x
	Psychological Factors	83	9	13	0	.422,.515x
	Environment	69	23	11	2	.171,.678x
Constraints	Constraints on care	33	62	0	13	4.96,.025x

X indicates that numbers in two or more cells were too small to calculate  $\chi^2$

## Appendix H

Table: Experimental group responses at pre- and post-test

# APPENDIX H. EXPERIMENTAL GROUP RESPONSES AT THE PRE TEST AND POST TEST

Section	Variable	Test			
		Pre		Post	
		Y	N	Y	N
Definition of Incontinence	Involuntary loss	19	84	37	73
	Urine	53	50	72	38
	Faeces	19	84	30	80
	Objectively demonstrable	0	103	4	106
	Social or hygienic problem	3	100	21	89
Prevalence of Incontinence	UK Number of sufferers	4	94	51	53
	Who suffers?	49	54	54	56
Types of urinary incontinence	Urge	35	68	83	27
	Stress	94	9	105	5
	Outflow Obstruction	17	86	53	57
	Neurogenic bladder	13	90	56	54
	Nocturnal Enuresis	11	92	9	101
Factors causing urinary incontinence	Urinary Tract Infection	66	34	72	35
	Faecal Impaction	26	74	49	58
	Drugs	22	78	48	59
	Endocrine Disorders	6	94	13	94
	Age	8	92	18	89
Factors affecting ability to cope with the bladder	Mobility	60	38	65	41
	Mental state	42	56	52	54
	Psychological state	14	84	15	91
	Environment	39	59	55	51
	Carers	4	94	28	78
Assessment	Continence history/assess	49	51	63	44
	Medcal history	21	79	42	65
	Social History	5	95	28	79
	Physical examination	7	93	13	94
	Frequency volume chart	44	56	62	45
Investigations	Frequency Volume Chart	7	95	13	93
	Urinalysis	38	64	28	78
	MSU	76	26	79	27
	Physical examination	18	84	42	64

	Pelvic floor assessment	9	93	22	84
	Urodynamics	17	85	24	82
	Cystoscopy	16	86	25	81
Promotion of continence	Bladder re-education	46	53	81	26
	Pelvic muscle re-education	40	59	52	55
	Vaginal cones	0	99	7	100
	Electrical stimulation	0	99	8	99
	General exercise	2	97	0	107
Education: Types	Cognitive	39	46	51	44
	Affective	13	72	19	76
	Psychomotor	30	55	47	48
Factors affecting teaching methods adopted	Motivation	5	75	8	84
	Memory	6	74	11	81
	Age	18	62	28	64
	Compliance	19	61	18	74
	Psychological factors	15	75	9	83
	Environment	13	67	23	69
Constraints	Constraints on care	59	32	62	33

## Appendix I

Table: Control group responses at pre- and post-test

# APPENDIX I. CONTROL GROUP RESPONSES AT THE PRE AND POST TEST

Section	Variable	Test			
		Pre		Post	
		Y	N	Y	N
Definition of Incontinence	Involuntary loss	0	14	4	10
	Urine	9	5	12	2
	Faeces	3	11	3	11
	Objectively demonstrable	0	14	0	14
	Social or hygienic problem	0	14	2	12
Prevalence of Incontinence	UK Number of sufferers	1	12	2	12
	Who suffers?	7	7	7	7
Types of urinary incontinence	Urge	3	11	3	11
	Stress	13	1	14	0
	Outflow Obstruction	3	11	4	10
	Neurogenic bladder	2	12	2	12
	Nocturnal Enuresis	3	11	2	12
Factors causing urinary incontinence	Urinary Tract Infection	10	4	13	1
	Faecal Impaction	5	9	6	8
	Drugs	6	8	7	7
	Endocrine Disorders	0	14	2	12
	Age	0	14	2	12
Factors affecting ability to cope with the bladder	Mobility	10	4	9	5
	Mental state	6	8	5	9
	Psychological	1	13	3	11
	Environment	2	12	5	9
	Carers	0	14	1	13
Assessment	Continence history/assess	11	3	7	7
	Medical history	2	12	1	13
	Social History	3	11	3	11
	Physical examination	1	13	0	14
	Frequency volume chart	3	11	6	8
Investigations	Frequency Volume Chart	1	13	1	13
	Urinalysis	9	5	5	9
	MSU	12	2	11	3
	Physical examination	4	10	7	7
	Pelvic floor assess	1	13	1	13

	Urodynamics	2	12	3	11
	Cystoscopy	9	5	4	10
Promotion of continence	Bladder re-education	7	7	4	10
	Pelvic muscle re-education	6	8	6	8
	Vaginal cones	0	14	0	14
	Electrical stimulation	0	14	0	14
	General exercise	1	13	1	13
Education: Types	Cognitive	8	6	8	6
	Affective	2	12	2	12
	Psychomotor	7	7	11	3
Factors affecting teaching methods	Motivation	1	11	0	14
	Memory	0	12	2	12
	Age	2	10	2	12
	Compliance	4	8	4	10
	Psychological factors	0	12	0	14
	Environment	6	6	3	11
Constraints	Constraints on care	13	2	13	1

## Appendix J

Table: McNemar test statistics



# APPENDIX J. MCNEMAR TEST STATISTICS

Section	Variable	McNemar Test, p value	
		Exp	Control
		$\chi^2_{(1)}$	1
Definition of Incontinence	Involuntary loss	30.53,<0.01	<0.01
	Urine	2.15,0.14	0.15
	Faeces	36.36,<0.01	0.04
	Objectively demonstrable	104.00,<0.01	<0.01
	Social/ hygeinic problem.	78.53,<0.01	<0.01
Prevalence of Incontinence	UK Number of sufferers	40.42,<0.01	<0.01
	Who suffers	.34,0.56	1.0
Types of urinary incontinence	Urge	.79,22.<0.01	0.03
	Stress	78.22,<0.01	<0.01
	Outflow Obstruction	20.55,<0.01	0.06
	Neurogenic bladder	23.88,<0.01	<0.01
	Nocturnal Enuresis	70.72,<0.01	0.02
Factors causing urinary incontinence	Urinary Tract Infection	8.91,0.003	0.04
	Faecal Impaction	11.44,<0.01	0.42
	Drugs	16.00,<0.01	0.79
	Endocrine Disorders	75.69,<0.01	<0.01
	Age	65.98,<0.01	<0.01
Factors affecting ability to cope with the bladder	Mobility	3.12,0.07	0.45
	Mental state	1.26,0.26	0.45
	Psychological state	55.00,<0.01	<0.01
	Environment	1.34,0.25	0.03
	Carers	64.98,<0.01	<0.01
Assessment	Continence history/assess	.17,0.68	0.65
	Medcal history	63.44,<0.01	<0.01
	Social History	73.22,<0.01	0.04
	Physical examination	.00,1.00	<0.01
	Frequency volume chart	72.25,<0.01	0.15
Investigations	Frequency Volume Chart	72.25,<0.01	<0.01
	Urinalysis	13.11,<0.01	1.0
	MSU	22.36,<0.01	0.08
	Physical examination	24.70,<0.01	0.39

<sup>1</sup>Binomial two tailed p.

	Pelvic floor assessment	58.88,<0.01	<0.01
	Urodynamics	41.37,<0.01	0.01
	Cystoscopy	42.23,<0.01	0.82
Promotion of continence	Bladder re-education	5.01,0.03	0.48
	Pelvic muscle re-education	2.06,0.15	0.61
	Vaginal cones	98.01,<0.01	<0.01
	Electrical stimulation	97.01,<0.01	<0.01
	General exercise	99.23,<0.01	<0.01
Education: Types	Cognitive	.19,0.66	0.79
	Affective	43.20,<0.01	0.01
	Psychomotor	3.70,0.05	0.34
Factors affecting teaching methods	Motivation	68.36,<0.01	<0.01
	Memory	62.94,<0.01	<0.01
	Age	24.69,<0.01	0.01
	Compliance	31.35,<0.01	0.18
	Psychological factors	67.37,<0.01	<0.01
	Environment	36.90,<0.01	0.33
Constraints	Constraints on care	6.79,<0.01	<0.01

Appendix K

Continence Attitude Questionnaire

CODE=□□

## CONTINENCE CARE QUESTIONNAIRE

This questionnaire is in three sections. Please answer each question as best you can. All information will be treated in the strictest confidence and will be used only for the purpose of this survey. Time allocation for completion of the survey is fifteen minutes.

### Section 1

The following questions are about yourself and your work. Please consider each one and tick or indicate the appropriate answer.

1. What is your position? (Please tick box)

1.1 ☐

Ward sister/ charge nurse

☐

Primary Nurse

☐

Associate Nurse

☐

Team nurse

☐

Other (please specify)

☐

2. What is your grade (e.g. a, b, c, d, e etc.)?

1.2 ☐

3. Which qualifications do you hold? (tick all which apply)

SRN/RGN

☐

1.3a ☐

EN

☐

1.3b ☐

ENB Course

☐

1.3c ☐

University degree

☐

1.3d ☐

Other (please specify)

☐

1.3e ☐

None

☐

1.3f ☐

4. How old are you? (insert age in box)

1.4 ☐☐

## Section 2

The following section contains questions relating to urinary incontinence. Please write your responses briefly in the space provided.

1. Who suffers with urinary incontinence?

2.1 ☐

2. What are the main types of urinary incontinence?

2.2a ☐

2.2b ☐

2.2c ☐

2.2d ☐

2.2e ☐

2.2f ☐

3. How would you assess someone with urinary incontinence?

2.3a ☐

2.3b ☐

2.3c ☐

2.3d ☐

2.3e ☐

2.3f ☐

4. What investigations may be indicated for a person suffering from urinary incontinence?

2.4a ☐

2.4b ☐

2.4c ☐

2.4d ☐

2.4e ☐

2.4f ☐

2.4g ☐

2.4h ☐

5. What strategies would you use for the promotion of urinary continence in the following cases:

i) a patient suffering from leakage on sudden movement, coughing or laughing?

2.5.i ☐

ii) a patient with symptoms of frequency and urgency?

2.5.ii ☐

6. What aids and appliances *can* be used in the management of urinary incontinence?

2.6 ☐ ☐

7. What aids and appliances *do you currently use* for urinary incontinence?

2.7 ☐ ☐

8. Would you refer someone with incontinence to other health care professionals?

NO ☐

2.8 ☐

YES ☐

If yes, list other health care professionals who may be approached 2.8a ☐

2.8b ☐

2.8c ☐

2.8d ☐

2.8e ☐

2.8f ☐

2.8g ☐

2.8h ☐

2.8i ☐

2.8j ☐

**THANK YOU VERY MUCH FOR YOUR HELP**

### Section 3

Reproduced with kind permission from Dr Francine Cheater.

Original source: Cheater F M (1990) Urinary Incontinence in hospital in-patients: a nursing perspective. PhD thesis, University of Nottingham.

Below are a number of statements. Please tick the appropriate box indicating the extent of your agreement or disagreement with each statement or your uncertainty of it (please tick one box only for each statement).

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. The nurses primary role in caring for patients with incontinence should be concerned with supplying appropriate aids.					
2. Incontinence is only a nursing problem.					
3. During the early stages of stroke rehab, bladder problems are best dealt with by a catheter.					
4. The assessment and management of incontinence is most suited to a MDT approach					
5. Two hourly toileting and incontinence aids are the only realistic way to promote continence in the elderly					
6. Patients are often incontinent due to laziness					
7. Elderly people with long-standing incontinence problems do not usually require investigation					
8. Incontinence is an inevitable part of the ageing process					
9. Continence promotion is a specialised skill and should therefore be left to people such as continence advisors					
10. Continence is a realistic goal for many incontinent people					
11. I find it demoralising looking after incontinent patients because there is little I can do to help					
12. Incontinence is usually more distressing for a young person than for someone who is elderly					



Appendix L

Research Attitude Questionnaire

## Questionnaire: Research in Practice

CODE ☐☐

We would like you to take around 5-10 minutes to look at the items in the following table. The table contains statements made by nurses when they were interviewed and we are interested to know to what extent you may agree or disagree with them. Each of the items are about research.

Please indicate to what extent you agree or disagree with the following statements, by ticking in the column which best represents your view:

Statement	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. Research is valuable to nursing practice					
2. Research is valuable to patient care					
3. Research is just not practical where I work					
4. I regularly use research to guide my nursing practice					
5. I think research is irrelevant and we should just get on with looking after patients					
6. I feel confident in using research in practice					
7. I don't feel confident about my critical appraisal skills					
8. Research information is difficult to get hold of where I work					
9. I just don't have the time to read research					
10. I don't know which piece of research is useful and which piece is not					

Thank you for your time

## Appendix M

### Project information leaflet for patients

## **PATIENT INFORMATION SHEET**

A study is being undertaken in South Buckinghamshire NHS Trust to find out whether nurses use the latest research findings to help them plan care for their patients who suffer from urinary incontinence. Kate Williams and Brenda Roe are undertaking this project and are both nurses.

We would like to invite you to take part in this project. This would mean we would work with your nurses regarding your urinary incontinence, and take account of their nursing assessment and care. We would also like to interview you briefly about your incontinence, and would like to tape the interview. All information you give is completely confidential and the tapes will be erased following analysis. Any information collected about your care would be treated in the strictest confidence.

We would like to emphasise that your taking part in this project is entirely voluntary. Should you decide to take part, you are free to stop your participation at any time without giving a reason. If you choose not to take part in this study your care would not be adversely affected in any way.

Please take your time to consider whether or not you wish to take part. Please contact Kate Williams via your nurse if you would like any further information.

KATE WILLIAMS

BRENDA ROE

CONTINENCE PROJECT TEAM

## Appendix N

### Patient interview and data collection: Consent form



National Institute  
for Nursing

**CONTINENCE PROMOTION IN HEALTH CARE OF THE ELDERLY: AN  
INVESTIGATION INTO THE DISSEMINATION AND UTILISATION OF  
RESEARCH BY NURSES**

Have you read the information sheet? YES/NO

Have you had an opportunity to ask questions and discuss the study? YES/NO

Have you received satisfactory answers to all your questions? YES/NO

I.....  
hereby consent to participate in this study on the understanding that I can withdraw  
this consent at any time and that my current care and treatment received will not be  
affected. I understand that all information gained will be confidential and that  
information which is taped will be erased following analysis.

Date.....Signature or mark.....  
Name (Block letters).....

I confirm that I have explained to the patient the purpose and nature of the study.

Date.....Signed.....

Centre for Practice  
Development & Research  
Oxford

Working with the  
Royal College of Nursing

## Appendix O

Data collection form: patient information

## PATIENT DATA COLLECTION SCHEDULE

General information relating to patients incontinence.

This information is obtained by reference to the patients medical and nursing notes.

1. Initials \_\_\_\_\_ Patient Code ☐☐ 1 ☐☐
2. Sex: Male ☐ 2 ☐  
Female ☐
3. Date of birth \_\_\_\_\_ Age \_\_\_\_\_ 3 ☐☐
4. Has a medical diagnosis of urinary incontinence been made? 4 ☐  
NO ☐  
YES ☐
5. Type of urinary incontinence diagnosed. 5 ☐  
URGE ☐  
URGE AND STRESS ☐  
NOT RECORDED ☐
6. Has a nursing continence assessment been completed? 6 ☐  
NO ☐  
FORM PARTIALLY COMPLETED ☐  
FORM FULLY COMPLETED ☐
7. What investigations into urinary incontinence have been undertaken? (Tick relevant boxes)  
COMPLETED FREQUENCY VOLUME CHART ☐ 7.1 ☐  
URINALYSIS ☐ 7.2 ☐  
MSU ☐ 7.3 ☐  
PHYSICAL EXAMINATION ☐ 7.4 ☐  
PELVIC FLOOR ASSESSMENT ☐ 7.5 ☐  
URODYNAMICS ☐ 7.6 ☐  
RESIDUAL VOLUME OF URINE ☐ 7.7 ☐  
OTHER (record) ☐ 7.8 ☐



8. Has bladder training been adopted? (tick one box only)

8 ☐

NO ☐

YES ☐

9. What aids and appliances have been used in the management of urinary incontinence during this hospital stay?  
(multiple code)

DISPOSABLE BODY WORN PADS ☐ 9a ☐

RE-USABLE BODY WORN PADS ☐ 9b ☐

DISPOSABLE UNDERPADS ☐ 9c ☐

RE-USABLE UNDERPADS ☐ 9d ☐

PENILE SHEATHS ☐ 9e ☐

INDWELLING CATHETER ☐ 9f ☐

INTERMITTENT CATHETER ☐ 9g ☐

INTERMITTENT SELF CATHETER ☐ 9h ☐

SUPRA PUBIC CATHETER ☐ 9i ☐

BODY WORN URINAL ☐ 9j ☐

DRAINAGE BAGS ☐ 9k ☐

CATHETER VALVE ☐ 9l ☐

OTHER ☐ 9m ☐

NONE ☐ 9n ☐

10. What medications have been used in the management of urinary incontinence during this hospital stay?

10 ☐

ANTI-CHOLINERGICS ☐

ALPHA ADRENERGICS ☐

OESTROGEN THERAPY ☐

ANTI-DIURETIC HORMONE ☐

OTHER (record) ☐

NONE ☐

11. Has the patient been referred to other health care professionals in relation to their incontinence?

NO ☐

11 ☐

YES ☐

If yes, which (tick relevant boxes).

HOSPITAL CONSULTANT

☐

11a ☐

GENERAL PRACTITIONER

☐

11b ☐

CONTINENCE ADVISER

☐

11c ☐

PHYSIOTHERAPIST

☐

11d ☐

OCCUPATIONAL THERAPIST

☐

11e ☐

SOCIAL WORKER

☐

11f ☐

DISTRICT NURSE

☐

11g ☐

OTHER (record)

☐

11h ☐

12. Has care relating to incontinence been evaluated since admission?

12 ☐

YES, once

☐

YES, more than once

☐

NO

☐

13. How long has the patient suffered from incontinence?

\_\_\_\_\_ State length of  
time in months and years. Enter 99 if this information is not recorded.

\_\_\_\_\_

## Appendix P

### Wet episode chart

## WET EPISODE CHART

PATIENT NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

To be recorded hourly from 8am to 7pm.

To be recorded 3 hourly from 8pm to 7am.

### KEY:

**Incontinent voids**=when patient is incontinent of urine

**Continent voids**=when patient voids successfully in the toilet

**Dry runs**=when patient goes to the toilet but does not void

**Self initiated void**=when patient requests to go to the toilet and voids successfully

Please tick appropriate box to indicate type of void.

Time	Incontinent void	Continent void	Dry run	Self initiated void	No. of pads used
08.00					
09.00					
10.00					
11.00					
12.00					
13.00					
14.00					
15.00					
16.00					
17.00					
18.00					
19.00					
20.00					
21.00					
22.00					
23.00					
24.00					
01.00					
02.00					
03.00					
04.00					
05.00					
06.00					
07.00					
TOTAL					

## Appendix Q

### Patient interview schedule

## PATIENT INTERVIEW

I would like to ask you a few questions relating to your incontinence, only answer the questions you feel happy to respond to, this interview will take approximately twenty minutes.

**Severity Index (Sandvik et al 1993)**

SI1. How often do you experience urinary leakage?

- 1      Never
- 2      Less than once a month
- 3      Once or several times a month
- 4      Once or several times a week
- 5      Every day and/or night

SI2. How much urine do you lose each time?

- 1      Drops or a little
- 2      More

*SI3. Severity Index:*

*To score multiply QSI1 by QSI2*

*Code answers*

- 1      *Slight (score=1-2)*
- 2      *Moderate (score=3-4)*
- 3      *Severe (score=6-8)*

These questions refer to your current hospital admission.

1. Do you know the name of the type of incontinence you have?

If yes, what is the name of it? (Who gave you this information?)

2. Since you came into hospital has anyone asked you about your bladder problem?

If yes what sort of things did they ask you (e.g. diet, fluids, constipation)?

Who asked you these things?

If no, would you have liked to have been asked about your bladder problem? (why?)

3. Since you have been in hospital what help have you been given with your bladder problem?

Has this been helpful for your bladder problem?

If yes in what way? (less incontinent episodes)

4. Would you have liked any other help with your bladder problem?

If yes, what sort of things would you have found helpful?

---

## POST TEST

The same patient interview questions will be asked, in addition three questions will be asked at the post test to evaluate any differences to care that the intervention may have made.

A. Since the last time I spoke to you do you think that your bladder problems have changed in any way?

If so, in what ways?

B. Do you think that your care has changed regarding your incontinence over the last 4 weeks?

If yes, in what ways?

C. Did you find these changes helpful?

If yes, in what ways? Why do you think this was?

---



## Appendix R

Published work from thesis  
(secured in back pocket)

## Appendix S

Factsheet for practising nurses: Summary of conclusions  
and recommendations from the study

## IMPLICATIONS FOR PRACTISING NURSES

### SUMMARY OF CONCLUSIONS

It is hoped that the findings from the present project provide useful information for nurses trying to use research evidence in clinical practice (particularly in continence care). The study has shown that by tailoring methods for implementation to the actual needs of nurses it helps to ensure that nurses are committed to the process of change.

The following key conclusions can be drawn from the project:

- The ten most commonly reported barriers to the use of research in practice were:
  1. Research is overwhelming.
  2. Other staff are not supportive of change.
  3. Statistical analyses are not understandable.
  4. There is insufficient time in the job to implement new ideas.
  5. Results from research are not generalisable.
  6. There are inadequate facilities for the implementation of research findings.
  7. Relevant literature is not compiled in one place.
  8. The nurse does not have enough authority to change practice.
  9. The nurse feels unable to evaluate the quality of research.
  10. The nurse does not have time to read research.
- Nurses are able and prepared to identify strategies which will help to promote the use of research in clinical practice.
- The four most important strategies identified for research implementation were *education, accessibility of information, facilitation, ensuring direct relevance to patient care*
- When evaluating the effect of improving nurses' knowledge of continence care in a research study it was highlighted that recruiting nurses to take part in research is difficult.
- The evaluation of a user friendly research package showed that it was effective in improving nurses' knowledge of urinary incontinence.
- The implementation of a multi-faceted tailored approach for the implementation of research evidence in clinical practice was successful in improving:
  - nurses' knowledge and attitudes to urinary incontinence
  - nurses' attitudes towards research
  - nurses' documentation of continence issues in patient notes
  - patient outcomes in terms of reduced number of wet episodes and reported severity of symptoms.

## **SUMMARY OF RECOMMENDATIONS**

The recommendations from this project can be divided into three key areas:

- recommendations for clinical practice
- recommendations for nurse education
- directions for future research

### **Recommendations for clinical practice**

- Dissemination and implementation strategies should be developed using the experience and recommendations of service providers. Only by deferring to their experience of barriers and facilitators to research use in clinical practice will they be overcome.
- Nurses are in an ideal position to recognise aspects of care where their practice lacks a research base. Mechanisms should exist by which they can shape future strategy for development of implementation strategies in particular areas of need.
- Dissemination and implementation strategies should be based on locally defined need, as well as centrally generated policy.
- Locally organised literature searching and appraisal skills workshops should be more widely available and targeted to the needs of the studentship.
- The continued use of 'link' workers in specialist aspects of practice should be encouraged in order to cascade new information to colleagues in an organised way afforded by appropriate time allocation to this end.
- Dissemination funds for research reports should not only include conference attendance and paper presentations, but funded study should be bound to disseminate findings in a measurable way to a relevant clinical setting.
- Researchers should not be set apart from clinical practice but should endeavour to maintain clinical credibility - either in a consultative role or as an educator. In addition, simple dissemination strategies such as research reports providing short 'implications for practice' fact sheets should be encouraged.

### **Recommendations for education**

- The undergraduate education of nurses should be taught by appropriately qualified academic staff. Ideally academic staff teaching on undergraduate research methods modules should be actively engaged in research.
- Postgraduate education in research for nurses should be mandatory (i.e. institutions involved in nurse education should be required to offer PG research training), easily accessible and flexible.

- Education within a multi-disciplinary environment would offer useful insights for all members of the multi-disciplinary team. Such educational initiatives are currently being implemented in many regions with both government and regional support. However, such courses may simply target those already interested and motivated to pursue further information, and knowledge levels of those involved in patient care need to be assessed before specific education programmes are developed.
- Within existing education programmes, undergraduate and postgraduate students could be encouraged to undertake innovative small scale studies focusing on implementing existing research evidence rather than small scale empirical studies.

### **Recommendations for future research**

- It may be useful to explore nurses' attitudes to research since the introduction of Project 2000 nurse education and as more nurses pursue and complete undergraduate and post-graduate education. The present study found only a small number of nurses who had undergone such academic preparation, perhaps in 5, 10 or perhaps 20 years we will see research evidence implemented swiftly and appropriately in clinical practice as these newly educated nurses impact on care provision. It would be useful to explore at regular intervals changes in attitudes to research and research implementation to determine the rate at which such changes are being achieved.
- Future research should explore and take account of the individuals who the research endeavour will impact upon and involve them in the research process.
- A further large scale study could be undertaken examining the educational preparation and attitudes to research of all members of the multi disciplinary team.
- A Randomised Controlled Trial and economic evaluation of a variety of implementation strategies could be undertaken to determine their -effectiveness, determined by standardised patient outcome measures and economic viability.
- Whilst the experience of the present study was that knowledge improved after use of the clinical handbook, long term follow up was not undertaken. Knowledge gained in the short term may not have been retained, assimilated and translated into practice changes. If large scale implementation studies are to be undertaken, the measurement of long term outcomes will be essential.



























